

PK-01 MILITARY RED DOT RIFLE SCOPE FAMILY

PK-01, PK-01V, PK-01VI, PK-01VM, PK-01VA,
PK-01VE, PK-01VS, PK-01VP

OVERVIEW

INTRODUCTION:

Thank you for choosing the PK-01XX red dot rifle scope from East Wave Products Inc. We are confident that the optic you have chosen will live up to your highest expectations.

Please read this manual carefully before using the scope. This manual will guide you through the steps to properly install, zero and maintain your device for optimal performance. It also gives explicit technical information on construction and operating characteristics of this scope.

Should you have any questions that have not been addressed in this manual please contact us at support@eastwave.ca. We will be happy to assist you.

Background



Belarusian Optical & Mechanical Association

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PK-01XX red dot scopes are designed and manufactured by Belarusian Optical & Mechanical Association, Belorussia, engaged in the field of development and production of high-precision laser, optoelectronic, optical and optical-mechanical devices, instruments, units and systems for ground troops, space, marine services, industries, medicine, tourism, etc. This company has a long and glorious history. Since 1957 it

has been a major supplier of sighting devices intended for the Soviet Army and special military organizations.

Their products are still in a wide use by modern military organizations in CIS countries and throughout the world. In Russia, the PK-01XX scopes are installed on rifles of Border Control Agency, Police, OMON and other law enforcement units, as well as Ministry of the National Defense. The solid iron body of these scopes allows them to perform accurately and failure-free on firearms of nearly any caliber.

GENERAL DESCRIPTION:

Product Overview

The PK-01XX is a modern, mil-spec, light collimator scope simple in design and construction. Every product in this family is particularly reliable and sturdy. They are designed for accurate firing by rifles in daylight and dusk conditions and are guaranteed to significantly increase your accuracy. In addition to accuracy, like any other red dot scope, the PK-01XX makes aiming much faster than regular iron or optic sights.

Models Available

Today the PK-01 red dot family consists of the following models: PK-01, PK-01V, PK-01VI, PK-01VM, PK-01VA, PK-01VE, PK-01VS, PK-01VP. Each of these models has up to a dozen versions slightly differing from one to another by optional parts, mounting and power options. However, despite of this great variety, most characteristic and features are generic for all models covered by this manual.

Main Features

The PK-01XX has all advantages of the collimator scopes. It's parallax free and due to a zero magnification (x1) provides unlimited field of view. This feature makes target acquisition much easier and faster with no need to focus the scope.

Rangefinder capability of the PK-01XX is provided by a red dot of a constant angular size. One can roughly estimate the distance to the target of known dimensions by comparing its apparent size with size of the dot.

Illuminated reticle implemented in the PK-01XX has a special 8 setting of the brightness, discrete built-in variable brightness control allowing you to adjust the brightness of the dot manually. The lower numbers represent dimmer settings and the higher numbers represent brighter settings. The "0" position indicates that the unit is OFF. The first three positions are to be used with night vision equipment. Discrete reticle illumination intensity adjustment allows for aiming targets that have brightness ranging from 10 to 5000 lx. The PK-01XX reticle can be either a dot or a T-shaped mark

depending on the model purchased. Permissible deviation of the aiming mark of the focal plane lies within 0 to -0.2 diopters.

Eye relief of the scope is the distance from the eyepiece at which the shooter's eye can obtain a full viewing angle. As there is no set eye relief for red dot scopes, please allow a minimum of 3-4 inches of space between the ocular and the shooter's eye, when in the shooting position.

At 1x magnification, field of view depends on the eye relief which is variable. At minimal recommended distances between the shooter's eye and the ocular (eyepiece), conditional angular field of view is no less than 13° or 225 meters at 1000 meters range. On the other hand, the non-magnification design allows for both-eyes-open shooting. This aiming technique makes the field of view virtually unlimited.

Mounting options depend on the model. The PK-01 family has a great variety of mounting options. Mounts of different types can come either in one piece with a scope or in detachable setup. Detachable or mount-free scopes have 30mm tube diameter and can be installed on practically any weapon using standard 30mm mounting rings. PK-01 scopes with non-detachable mounts fit either a regular dovetail side rail or a Weaver/Picatinny upper rail.

Working conditions.

The unit can operate at temperatures ranging from -40° to +50°C. However, the range of working temperatures can be limited by the battery type. Being designed for military applications, the PK-01XX meets all Russian mil-spec requirements and provides the highest level of reliability. It is water-, splash- and shatterproof with a nitrogen fill that prevents the scope from fogging. It is overbuilt to handle the strongest of recoils and can be attached to any weapon regardless of caliber.

Ballistic adjustment is carried out with the windage and elevation knobs covered by protective caps. The adjustment knobs have clear pronounced 2/3 MOA (2cm at 100m) clicks, which provides an extremely high level of accuracy. Some PK-01XX scopes provide even more precision with 0.5 MOA clicks, shifting the point of impact by approximately 1.5cm at 100m (0.5in at 100yd). Windage/Elevation adjustments can be made within a $\pm 1^\circ$ range, which is 340cm at 100m.

Power.

PK-01 family models differ by power supply options including voltage that can be either 1.5V or 3V, battery type and lifetime. Maximal time of continuous operation depends on particular batteries used in the scope.



TECHNICAL SPECIFICATIONS

PK-01



Windage/Elevation Adjustment (per click):	2/3 MOA
Windage/Elevation Adjustment Range:	$\pm 1^\circ$
Reticle:	Red Dot
Red Dot Size:	2.5 MOA
Red Dot Variable Brightness Control:	8 positions
Power Source:	3V (2xAAA)
Battery Life (continuous operation at medium brightness):	500 hours
Mount Type:	AK side rail or Weaver/Picatinny
Weight:	0.6kg (1.3lb)
Overall Dimensions:	165x65x145mm

PK-01 V



Windage/Elevation Adjustment (per click):	2/3 MOA
Windage/Elevation Adjustment Range:	±1°
Reticle:	Red Dot
Red Dot Size:	1.5 MOA
Red Dot Variable Brightness Control:	8 positions
Power Source:	3V (2xAAA/LR03)
Battery Life (continuous operation at medium brightness):	500 hours
Mount Type:	AK side rail or Weaver/Picatinny
Weight:	0.6kg (1.3lb)
Overall Dimensions:	165x65x145mm

PK-01 VI



Windage/Elevation Adjustment (per click):	2/3 MOA
Windage/Elevation Adjustment Range:	$\pm 1^\circ$
Reticle:	Red Dot
Red Dot Size:	2.5 MOA
Red Dot Variable Brightness Control:	8 positions
Power Source:	3V (CR 1/3N)
Battery Life (continuous operation at medium brightness):	>50 hours
Mount Type:	Weaver/Picatinny
Weight:	0.58kg (1.3lb)
Overall Dimensions:	155x60x70mm

PK-01 VM



Windage/Elevation Adjustment (per click):	2/3 MOA
Windage/Elevation Adjustment Range:	$\pm 1^\circ$
Reticle:	Red Dot
Red Dot Size:	2.5 MOA
Red Dot Variable Brightness Control:	8 positions
Power Source:	1.5V (AA)
Battery Life (continuous operation at medium brightness):	250 hours
Mount Type:	Weaver/Picatinny
Weight:	0.6kg (1.3lb)
Overall Dimensions:	145x68x65mm

PK-01 VS



Windage/Elevation Adjustment (per click):	0.5 MOA
Windage/Elevation Adjustment Range:	$\pm 1^\circ$
Reticle:	Red Dot
Red Dot Size:	1 MOA
Red Dot Variable Brightness Control:	8 positions
Power Source:	1.5V (AA)
Battery Life (continuous operation at medium brightness):	400 hours
Mount Type:	AK side rail
Weight:	0.4kg (1lb)
Overall Dimensions:	149x64x130mm

PK-01 VP



Windage/Elevation Adjustment (per click):	2/3 MOA
Windage/Elevation Adjustment Range:	$\pm 1^\circ$
Reticle:	Red Dot
Red Dot Size:	2.5 MOA
Red Dot Variable Brightness Control:	8 positions
Power Source:	1.5V (AA)
Battery Life (continuous operation at medium brightness):	1000 hours
Mount Type:	Weaver/Picatinny
Weight:	0.4kg (1lb)
Overall Dimensions:	137x64x65mm

PK-01 VA



Windage/Elevation Adjustment (per click):	2/3 MOA
Windage/Elevation Adjustment:	Range $\pm 1^\circ$
Reticle:	Red Dot
Red Dot Size:	2.5 MOA
Red Dot Variable Brightness Control:	8 positions
Power Source:	3V (CR 1/3N)
Battery Life (continuous operation at medium brightness):	> 50 hours
Mount Type:	AK side rail or weaver/Picatinny
Weight:	0.65kg (1.4lb)
Overall Dimensions:	155x85x174mm

PK-01 VE



Windage/Elevation Adjustment (per click):	2/3 MOA
Windage/Elevation Adjustment Range:	±1°
Reticle:	Red Dot
Red Dot Size:	2.5 MOA
Red Dot Variable Brightness Control:	8 positions
Power Source:	3V (CR 1/3N)
Battery Life (continuous operation at medium brightness):	> 50 hours
Mount Type:	AK side rail or Weaver/Picatinny
Weight:	0.6kg (1.3lb)
Overall Dimensions:	142x83x155mm

Included Accessories



Figure 1

The PK-01XX red dot scope comes with a full set of accessories including a soft carry case, protective lens covers, windage/elevation knob caps and tools necessary for setup and maintenance procedures. (See Figure1)

FUNCTIONAL CAPABILITIES

SYSTEM COMPONENTS:

Since PK-01 red dot scopes come in several configurations, this manual features components of 3 typical PK-01 models covering all basic parts and most of optional ones (see Figures 2 through 4).



Figure 2

UNIT WITH DETACHABLE WEAVER/PICATINNY MOUNT

1. Dot brightness control
2. Battery compartment
3. Elevation adjustment knob (covered)
4. Battery compartment cover
5. Windage adjustment knob (covered)
6. Mounting ring (30mm)
7. Weaver/Picatinny mount
8. Objective aperture



Figure 3

UNIT WITH INTEGRATED WEAVER/PICATINNY MOUNT

1. Objective aperture
2. Elevation adjustment knob
3. Ocular
4. Windage adjustment knob
5. Dot brightness control
6. Windage & Elevation protective caps
7. Weaver/Picatinny mount
8. Battery compartment cover
9. Battery compartment



Figure 4

UNIT WITH INTEGRATED SIDE MOUNT

1. Lens rubber covers
2. Elevation adjustment knob
3. Windage adjustment knob
4. Battery compartment
5. Dot brightness control
6. Objective aperture
7. Battery compartment cover
8. AK-type side mount
9. Locking lever

DESIGN AND OPERATION

Battery Changes

To replace batteries open the battery compartment's cover and remove the dead batteries. Install the new ones by following the instruction given in the "BATTERY INSTALLATION" section below. Keep in mind that although according to specifications the scope can be used at -40°C , some batteries fail at extreme temperatures. For example, regular alkaline batteries produce a significant drop of charge at temperatures lower than -10°C which would make your scope inoperable. That is why you should check if its working temperatures fit the weather conditions you shoot in before you install a new battery.

Windage & Elevation Adjustment

Presumably, red dot scopes are used for quick aiming at short distances where a bullet trajectory is more or less a straight line and there is no need to compensate its decline caused by gravity. That is why the PK-01 elevation and windage knobs (Figure 5) are only intended for zeroing the scope at a certain range. Windage/elevation adjustment knobs look like the ones on Figure 5. The arrow on the windage knob black top shows the direction of the dot's location correction and is signed "BBEPX" ("UP"). Windage adjustment arrows can be marked either "ВПРАВО" ("RIGHT") or "ВЛЕВО" ("LEFT"). The range of adjustment is limited by three turns of the knob. After the scope has been properly mounted and zeroed you may want to save your windage/elevation settings. For that you should screw the windage and elevation protective caps back in place to avoid undesired shifts of the red dot. Please refer to the "ZEROING THE SCOPE" section for more details.



Figure 5

Windage /elevation protective caps should be on to cover the knobs at all times, unless you are using them for zeroing the scope. This will prevent the scope from dust and dirt getting into the adjustment system.

Dot Brightness Adjustment



Figure 6

The PK-01XX red dot scope is designed with a unique discrete built-in rheostat that features 8 positive detents for a full range of light intensities. The first three lowest intensity positions are to be used with night vision equipment. The dot brightness control dial is facing the shooter (Figure 6), which makes changing intensity convenient. The intensity reading of "1" (or "I") is the dimmest position. Turn the dial clockwise to brighten the dot. Make sure the dial is in the "OFF" position (marked "0") when the scope is not in use.

Characteristics of a Red Dot Scope

Like any other red dot scope, the PK-01 allows a quick target acquisition and accurate aiming at relatively short distances. This possibility is provided by the nature of collimating optics. The scope collimates a projected reticle (aligns the light so that the beam does not spread) and reflects it off a mirror that is designed to reflect one specific spectrum of the white light. Thus, while the reticle is reflected back toward the eye, the image from the front of the scope is allowed to pass through with no magnification.

This puts a reticle, usually looking like a red dot on the same focal plane as the target, allowing the eye to focus on both, the target and the reticle simultaneously. Thanks to the non-magnification nature, parallax is almost eliminated in these scopes, which makes the sight clear at all distances.

The result is that close targets can be instantly targeted and shot, no matter where the shooter's head is in relation to the weapon. If the dot is visible on the target, the target will be shot.

Aiming and Shooting With a Red Dot Scope

There are several general recommendations you may want to learn before you start using a red dot.

Once the scope is properly set up, you can switch it on by turning the brightness adjustment control dial clockwise. Keep turning the dial until the dot becomes fairly visible against the surroundings. Always keep the reticle brightness adjusted as low as possible for lighting conditions. This will give a clearer sight picture and obscure the target less.

With the weapon's safety on, identify and focus on a target. Keeping both eyes open, bring the weapon up to the firing position. As the scope comes up in front of the eyes, a red dot will appear in sight. When the red dot reaches the point of aim, switch the safety off and engage the target. Both eyes remain open and the focus never moves from the target.

The possibility to aim with both eyes open is one of the major advantages of collimating scopes, because it provides an unlimited field of view, which significantly facilitates target search and acquisition.

Red dot scopes are considered to be short distance aiming devices. However, despite common beliefs, these scopes do not lose accuracy with distance. One can certainly use a red dot for targets over 100 meters away. If a sighting system is accurate at 50 meters it should still be accurate at 200 meters, but at extended ranges we begin to get into the issue of effectiveness. At a certain point, depending on shooter's skills and eyesight the magnification may be required to increase the effectiveness.

Aside from the magnification, as most of other red dot scopes, the PK-01XX is missing bullet drop compensation (BDC) system. At distances over 100m the bullet trajectory decline becomes noticeable and you may need to correct it. Since there is no way to adjust elevation promptly, the red dot should be placed above the point of aim to compensate the bullet drop for relatively remote targets. The angle would depend on the distance to the target, the rifle you use and the range it has been zeroed at.

In addition to that, at longer ranges a cheek weld (position of the cheek against the stock) becomes more critical. Minor parallax can cause insignificant deviations in point of impact at close ranges, but at long ranges this error is magnified. The solution is to pay more attention to the eye position, as you do when shooting with iron sights or a standard rifle scope.

In spite of the fact that the dot and the target look equally clear in the scope, a human eye still has to choose between the two. As long as we keep both eyes open we are naturally more focused on the target. However, some people focus somewhere between the dot and the target. This is similar to looking at the target with iron sights but it is not going to work well with red dot scopes so, be sure to

understand where your focus is. For example, if you have a large open area due to remoteness of the target or an inconvenient aiming position it is hard to lock the dot on the target. In this case it is recommended to bring your focus back to the dot.

Another issue that may become questionable is the red dot position. In some cases due to discrepancies of mounting the scope, the zeroing procedure may bring the dot off the center. Although humans like to see things geometrically correct, the dot does not necessarily need to stay centered in the scope. If the scope is properly zeroed, the dot's position in relation to the optic center doesn't affect accuracy.

SETTING UP

BATTERY INSTALLATION



Figure 7

To install or replace batteries, switch the brightness control dial into the "OFF" ("0") position. Then take off the battery compartment cover turning it counter clockwise. Remove the old batteries (if any) and insert the new ones observing polarity as it is shown on the battery compartment (Figure 7). Make sure

you are using batteries that fit your scope in accordance with its specification. Afterwards, put the cover back in place turning it clockwise with slight pressure.

See if the dot is on when the brightness control dial is in a working position. Keep in mind that the dimmest positions ("1"- "3" or "I"- "III") are intended for night vision goggles and the dot is nearly invisible to the naked eye in this mode.

MOUNTING THE SCOPE

Mounting options depend on the model. The PK-01 family has a great variety of mounting options. Mounts of different types can come either in one piece with a scope or in detachable setup. Detachable or mount-free scopes have 30mm tube diameter and can be installed on practically any weapon using standard 30mm mounting rings. PK-01 scopes with non-detachable mounts fit either a regular dovetail side rail or a Weaver/Picatinny top rail.

Mounting specifics are way beyond the scope of this manual. For more detailed information one should be referred to documents describing particular mounts/scopes or mount-rifle compatibility charts.

The PK-01XX red dot scope can have two general mounting options. It can be installed either on the upper Weaver/Picatinny rail or on a regular dovetail side rail (see Figures 8-9).



Figure 8



Figure 9

Upper rail mounting

Before mounting the scope make sure that the mount matches the upper rail installed on your rifle.

Loosen the mounting cross-bolts and slide the scope onto the rail (Figure 8). Move the scope until the proper eye relief in the assumed shooter's position is reached. Proper eye relief is reached when the entire field of view is clear. Tighten the mount grip turning the locking cross-bolts clockwise to fix the scope in position.

Make sure that the optic is tight enough for the scope to withstand recoil.

Side rail Mounting

Before mounting the scope make sure that the mount matches the side rail installed on your rifle.

If you are not sure you have the correct rail model for your scope, it is possible to mount the scope on a wrong rail. While it may seem to 'fit', you will encounter problems such as too much or not enough of eye relief, the scope won't hold its "zero" if removed, etc. Finally, shooting with an improperly installed scope may cause damage due to recoil.

The PK-01XX with a non-detachable mount will fit a regular 14 mm dovetail side rail placed on the left side of your rifle. The mounting procedure consists of the following steps:

1. Loosen the clamp by turning the locking lever clockwise up to its extreme outer position (Figure 9). When in home position the lever is firmly locked to avoid occasional detachment of the scope. To unlock the locking lever pull it up and then turn it clockwise.
2. Slide the scope onto your side rail moving it forward towards the barrel until it reaches its uttermost position. Then turn the lever counterclockwise to tighten the clamp. Make sure that the lever is latched into its initial home position and won't come off unexpectedly.

Side Mount Clamp Adjustment



Figure 10

SIDE MOUNT MAIN PARTS:

1. Mount
2. Locking lever
3. Retaining clip
4. Adjustment screw
5. Clamp

The clamp can be adjusted if it appears to be too tight or too loose. Complete the following steps for the clamp adjustment:

1. Turn the locking lever (2) clockwise to release the clamp (5) and remove the scope from the rifle's side rail (Figure 10). Place the scope upside down to obtain easy access to the locking system of the mount.
2. Locate the retaining clip (3) that is holding the lever onto the scope. Using a flat screw driver, turn the adjustment screw (4) a little to release the clip.
3. Place a flat screwdriver's blade on the edge of the retaining clip and rotate it out of its indentation.
4. Once the retaining clip is placed at 90° to the locking lever, you can easily slide it off of the center shaft of the lever and remove it to release the locking lever (Figure 11).
5. After the clip is removed, you can disengage the lever from its tooth gear on the center shaft (Figure 12).
6. Slide the scope onto your side rail and then reposition the lever so that you have a nice tight fit. Be careful not to over-tighten!
7. Once the proper tension is obtained, you can fix the lever in the right position replacing the retaining clip by inserting the center shaft into the large hole in the clip. Then simply slide the clip back into the indentation and tighten back the adjustment screw if necessary
8. After the reassembling is complete you may want to try the fit. Make sure that the scope will slide onto the side rail easily, and will also tighten up securely. There should be a moderate amount of tension on the lever when it is about 85% closed, and it should take mild pressure to lock it completely. Do not over-tight! Repeat the procedure to adjust the grip if needed.



Figure 11



Figure 12

ZEROING THE SCOPE

General

Zeroing is the process of aligning the point of aim with the point of impact, so that the two become one (Figure 14).

Point of aim: The spot where you are aiming at, i.e. the red dot.

Point of impact: The spot where your bullet actually impacts the target.

Thus, all we are basically doing is making sure that the bullet actually goes where we put the red dot or any other aiming mark in the middle of the reticle.

We have to keep in mind that the trajectory of a bullet is more or less an arc rather than a straight line. When a bullet runs out of steam, it falls to the ground. This part seems fairly intuitive, but most people fail to realize that the moment the bullet leaves the barrel it succumbs to gravity and begins a downward trajectory. No matter how high powered the cartridge is, gravity always wins.

This fact brings us to a conclusion that we must zero the rifle at a certain range, and since gravity affects the bullet, the rifle is only zeroed to that range – any other range will require ballistic correction. That is why we should define the preferred range to zero the scope at.

On the other hand, red dot scopes are ordinarily used for relatively short distances where the gravity influence could be neglected and the trajectory is, therefore, close to a straight line.

In any case we have to follow the rule:

Zero at the range you intend to engage targets at

The safe bet for most shooters that are shooting .308 (7,62×51mm), .30-06 (7,62×63mm) or similar caliber is to zero at 100 meters, as this is an easily obtainable distance. These cartridges shoot relatively flat out to 500 yards, so there isn't much of adjustment that needs to be made inside those distances.

Pre-zeroing the Scope Using Iron Sights

The PK-01XX red dot scopes are optically centered. That means that if the mount base is properly aligned with your firearm's action, only minor adjustments should be necessary. It is easiest if you start the zeroing process from a short distance like 25...50 meters without actually shooting a target. This allows you to immediately see if further adjustments need to be made, which can save you time and ammunition.

1. Mount the scope to the rifle. Make sure it is firmly set on the side rail. It's easy to mount the optic slightly crooked if you are not careful.
2. Take the gun to a place where you can see about 50 yards away.
3. Activate the reticle by turning the rheostat knob clockwise and set an appropriate brightness level. Make sure that the aiming mark is centered and the rifle is unloaded. Since you are used to the iron sight (open sight) of your rifle for aiming, it has to be properly set on the chosen distance.
4. Position the gun on shooting bags or use the gun's bipod. Unscrew the protective caps off the windage and elevation knobs. Securely brace the gun and point it at the target.
5. Look through the open sight of the gun and aim it at the chosen target (Figure 13).
6. Next, without touching the gun, lift your eye up to the scope. Do you see the same object? If so, is the aiming mark centered on this object? If it is, no adjustment required. If not, carefully turn the elevation and windage knobs until the red dot corresponds to the view through your open sight. As long as the red dot is overlapping the point of aim, we consider the scope roughly zeroed.
7. Put the protective caps back on the knobs to avoid unintended deflections.

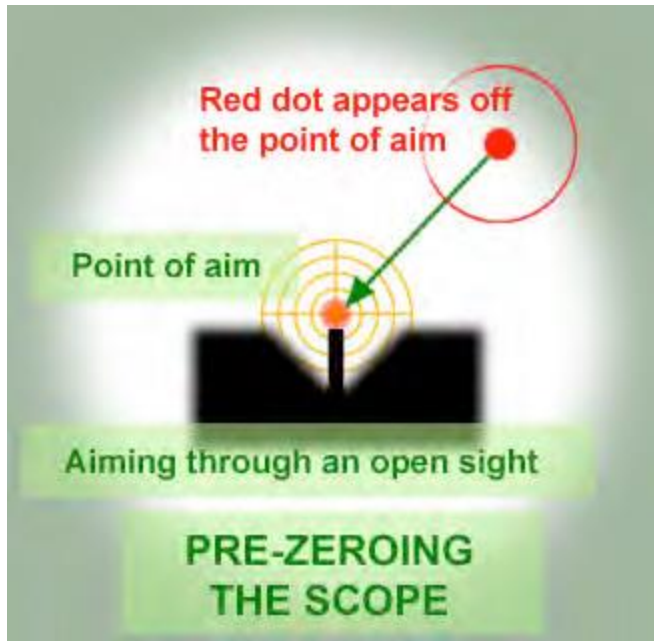


Figure 13

Zeroing At the Range

Since the precise long-range zeroing procedure involves real shooting, it is to be carried out outdoors with as little wind effects as possible. This method can be used with much longer shooting distances like 200 or 300 meters. Nevertheless, you may want to choose a range that appears most appropriate for your perspective targets, which usually doesn't exceed 100 meters.

1. Make sure the ballistic adjustment knobs are uncovered and the rifle is securely supported on sandbags or a bipod. Take as much of your body out of the equation as possible by not unnecessarily touching the rifle.
2. Turn the brightness control dial clockwise to activate the reticle and select the appropriate brightness level. Load the rifle, place the aiming mark on the target located at the chosen range, and using all of your effort, fire off the steadiest, most careful shot you can.
3. Note where the shot went. Was it high? Was it low? The best way to check this is by actually walking up to the target and looking at it. If that is not possible a spotting scope or binoculars will do.
4. Carefully look through the scope and place the aiming mark on the center of the target (Figure 14).
5. While holding the rifle steady, turn the windage and elevation knobs so that the mark drift from the center of the target to the hole of the shot you previously made.
6. Fire another round, aiming through the scope for the center of the target. Your shot should be dead on. If not, repeat steps 4 and 5.

7. After the scope has been zeroed the adjustment knobs are to be covered with the protective caps.
8. Now that your rifle and scope are zeroed for the chosen range, you may want to fire off a 3-5 shots group to make sure that the settings are correct.

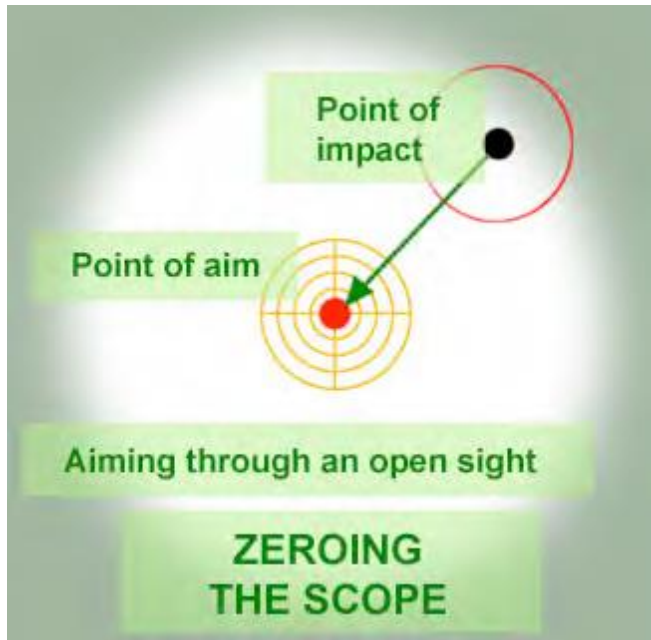


Figure 14

Zeroing With a Laser Bore Sighter

A good laser bore sighter will put you on paper. This easy-to-use product helps the sighting process go much smoother and can get a shooter within four inches of the bull's-eye at 100 yards.

Bore sighters generally come in two types: the ones that go into the chamber like a real cartridge and the ones that are to be attached to the front of the barrel. In any case, this device is needed to produce a laser beam coming straight out of the barrel. Thus, you can conveniently see through the scope both the laser spot covering the target and the aiming mark. Adjusting the scope, you can make the two points overlap without even taking your eye off the ocular.

Laser aiming provides more precision than an iron sight. That is why this method is considered to be more advanced in comparison to regular pre-zeroing. Aside from using a laser spot instead of an open sight, the pre-zeroing routine is the same as described above.

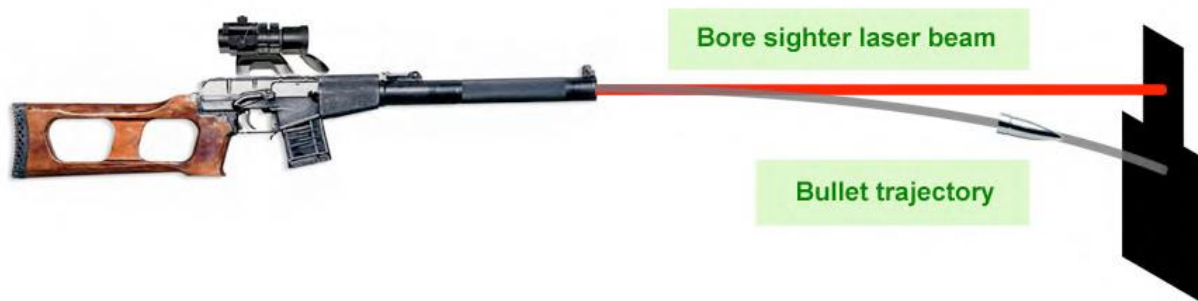


Figure 15

Despite all advantages, bore sight zeroing has an obvious drawback stipulated by divergence of the straight laser beam and the declining real bullet trajectory (see Figure 15). Therefore, the more range we have, the less accuracy we get. That is the reason why bore sighters won't work well at relatively long distances. Most manuals recommend aiming at a target that is 25-50 meters away.

No matter how good your bore sighting is, the final sight-in will be shooting the firearm. If you want to achieve maximum accuracy you should zero your optic scope with live ammunition as described above.

Final Notes

One should keep in mind that aside from precise zeroing the scope, there are other factors affecting accuracy of shooting. In addition to weather conditions that may influence the trajectory, your zero changes any time you:

- Use a sufficiently different load of ammunition than you zeroed with

- Use a heavier or lighter bullet than the bullet you zeroed with

- Hold the rifle differently or have a different cheek weld than you originally zeroed with

- Have a different eye relief than you originally zeroed with

- Shoot at a different range than you originally zeroed with

- Take off and reinstall the scope on unstable mounts

SAFETY AND MAINTENANCE REQUIREMENTS

SAFETY PRECAUTIONS AND STORAGE REQUIREMENTS

Before using the scope make sure that the mount matches the rail installed on your rifle. The scope must be securely fastened to it. Shooting with an improperly installed scope may cause damage due to recoil. See the mounting instructions above if the clamp appears too loose.

Never disassemble the scope.

Protect the scope from shocks and other mechanical damages to prevent damage of delicate components.

Do not touch the optical surfaces with your hands.

All moving assemblies are permanently lubricated and do not require additional lubrication.

After using the scope in wet conditions wipe it with a dry soft cloth and let it dry out at a temperature not exceeding +40°C.

Keep the ballistic adjustment protective caps in place at all times when you are not using the adjustment system. These caps are intended to keep moisture, dust and dirt out of the mechanical system.

Close the objective lens with the cover during breaks in operation. Protect optical lenses from scratches during operation and storage.

Store the device in the bag.

For devices in a sealed manufacturer's packing optimal storage conditions are at temperatures ranging from +5° to +40°C and relative humidity not exceeding 80% (at +25°C). Otherwise, the device should be stored in warm well-ventilated premises at temperatures ranging from +10° to +35°C and the same humidity.

Keep the batteries out of the battery compartment when the device is not in use for a long time.

Avoid storing the scope in hot places, such as a vehicle's glove box on a hot day. High temperature could adversely affect the lubricants and sealants. For this reason, you should not expose the scope to direct sunlight for long periods.

Don't expose the scope to rough temperature changes.

TRANSPORTATION

The scope can be transported by surface means of transportation at temperatures ranging from -50° to +50°C and the upper level of humidity 100% at +25°C. In case of transportation by sea, humidity should

not exceed 98% at +35°C. When transporting by air the device should be kept in warm airtight compartments.

CLEANING

Coarse dirt/debris must be removed from the lens surface. Failure to remove grit before final cleaning may damage lens coatings.

Gently whisk the debris away using the brush included in the set. For heavy dirt like dried mud, use a spray of clean water or lens cleaning fluid to remove the dirt.

After the dirt is removed, use a lens cloth or soft cotton cloth to whisk away the remaining smudges and debris. Lightly breathing on the lens surface will moisten the surface and aid this process. Never rub a lens — gently whisk it with slight pressure. Avoid having only one layer of cloth between your finger tip and the surface. Bunch up the cloth loosely so it absorbs the pressure of the cleaning. Rotate the cloth around the lens surface, working from center to edge of the lens.

Only occasional cleaning of the outside of the scope is required. You may use a soft cloth to wipe dirt or fingerprints off the scope body.

WARRANTY

The scope meets or exceeds the quality standards set forth by the manufacturer and its technical specifications matches those listed in this manual.

East Wave Products Inc. offers 14 days return/exchange policy after receiving the order and full Factory Warranty on all products sold against defects in workmanship and materials for one year from the date of purchase. If maintenance or feasible and justifiable repairs have to be done upon expiration of the warranty period, all costs related to these services are the responsibility of the customer.

For further questions or additional information please contact:

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