



# CROSSFIRE® II

RIFLESCOPE



PRODUCT MANUAL

**CROSSFIRE® II RIFLESCOPE**

The Crossfire® II series of riflescopes offer the highest levels of performance and reliability. With features such as generous eye relief, rugged construction, and precise, smooth controls, the Crossfire® II riflescopes are ready for any situation.



Images are for representation only.  
Product may vary from what is shown.

### Reticle Focal Plane

All scope reticles can be termed either First Focal Plane (FFP) or Second Focal Plane (SFP) according to the reticle's location within the scope. This model features an SFP reticle design.

SFP reticles are located near the eyepiece, behind the image erecting and magnifying lenses. This style of reticle does not visually change in size when you change the magnification. The advantage of an SFP reticle is that it always maintains the same ideal visual appearance.

**Note:** The Crossfire® II rifle scope reticle subtenions used for bullet drop and wind drift compensation are correct at maximum magnification. The 6-24x50 model is correct at 18x magnification.

### RIFLESCOPE ADJUSTMENTS

#### Ocular Focus

The ocular focus is a one-time adjustment used to focus the reticle for maximum sharpness. This adjustment is slightly different for every shooter. A clearly focused reticle is a critical component for accurate shooting.

#### Ocular Focus – Reticle Focus Adjustment

Your Crossfire® II rifle scope uses a Fast-Focus Eyepiece designed to quickly and easily adjust the focus on the rifle scope's reticle.

To adjust the reticle focus:

1. Set the magnification to the highest setting. If equipped, set the parallax to infinity.
2. Back out the diopter until the reticle is slightly blurry.
3. Turn the eyepiece in or out until the reticle image is as crisp as possible.

**Note:** Try to make this adjustment quickly, as the eye will try to compensate for an out-of-focus reticle.

Once this adjustment is complete, it will not be necessary to refocus every time you use the rifle scope. However, because your eyesight may change over time, you should recheck this adjustment periodically.

**Warning:** Looking directly at the sun through a scope, or any optical instrument, can cause severe and permanent damage to your eyesight.



### Magnification

The magnification adjustment is used to change the riflescope's magnification level, or "power," adjusting from low to high magnification depending on the shooter's preference.

### Magnification Adjustment

Rotate the indicator bar to the desired magnification.



### Turrets

The Crossfire® II riflescope incorporates adjustable elevation and windage turrets with audible clicks. Each audible click moves the bullet's point of impact 1/4 of a minute of angle (MOA).



1/4 MOA closely corresponds to 1/4 inch at 100 yards, 1/2 inch at 200 yards, and 3/4 inch at 300 yards. It takes four (4) clicks to move the bullet's point of impact approximately one inch at 100 yards.

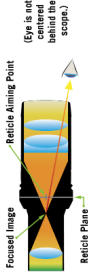
### To make turret adjustments:

1. Remove the elevation and/or windage turret cap(s).
2. Turn the turret in the direction you wish the bullet's point of impact to go: up or down, left or right.
3. Replace the turret cap(s) when done.

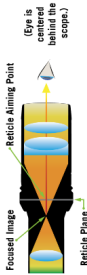
**Tip:** After sight-in, you can realign the zero marks on the elevation and windage turrets with the reference dots. See "Indexing the Turrets" section on page 15 for instructions.

### PARALLAX SETTING

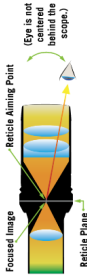
Parallax is a phenomenon that results when the target image does not fall on the same optical plane as the reticle within the scope. This can cause an apparent movement of the reticle in relation to the target if the shooter's eye is off-center.



- When the target image is not focused on the reticle plane and your eye is off-center behind the scope, parallax occurs. This is because the line of sight from the eye to the focused target image does not coincide with the reticle aiming point.



- When the target image is not focused on the reticle plane and your eye is centered directly behind the scope, no parallax occurs. This is because the line of sight from the eye to the focused target image coincides with the reticle aiming point.



- When the target image is focused on the reticle plane, parallax cannot occur, even if your eye is not centered behind the scope. This is because the line of sight from the eye to the focused target image always coincides with the reticle aiming point no matter where the shooter's eye is positioned.

The Crossfire® II riflescopes with fixed parallax are set for 100 yards. You will have a small amount of parallax inside and outside of 100 yards. Eliminate this by being centered perfectly behind the rifle scope.

### Image Focus and Parallax Correction

Some of the Crossfire® II rifle scope models use an image focus/parallax adjustment which provides maximum image sharpness and eliminates parallax error. Lower power models do not use image focus/parallax adjustments and are pre-focused at 100 yards.



#### Adjustable Objective (AO models)

Match shooting yardage to indicator dot. 100 yard setting shown.

Using image focus/parallax correction:

1. Be sure the reticle is correctly focused (see Reticle Focus on page 5).
2. Rotate the adjustable objective until numbers match the distance you are shooting. Align yardage number to the indicator arrow on scope body.
3. Check for proper setting by looking through the scope to verify image sharpness and, at the same time, look for reticle shift while moving your head back and forth.
4. The setting is correct if there is no apparent movement between the reticle and target while your head is moving back and forth. If there is apparent movement, adjust the focus knob slightly until the movement is eliminated.

When properly set, the target image should be sharp and crisp.

**Note:** The numbers on the adjustable objective are there for reference and may perfectly correspond with the actual yardage.

### Reticle Illumination Adjustment

Some Crossfire® II rifle scope models offer an illuminated reticle controlled by an adjustment knob on the eyepiece. Adjust the illumination intensity by rotating the knob either clockwise or counter-clockwise.

### Battery Replacement

1. Unscrew the outer cap with a coin.
2. Remove the battery.
3. Replace with a new CR 2032 battery.
4. Install battery with plus (+) side up.
5. Reinstall the outer cap and tighten securely.

Battery cover on top of adjustment knob.



### RIFLESCOPE MOUNTING

To get the best performance from your Crossfire® II rifle scope, proper mounting is essential. Although not difficult, the correct steps must be followed. If you are unsure of your abilities, use the services of a qualified gunsmith.



### Rings And Bases

Mount an appropriate base and matching rings to your rifle according to the manufacturer's instructions. Your new Crossfire® II rifle scope requires either 1-inch or 30mm rings. Refer to the dimensions listed on the box or go to [VortexOptics.com](http://VortexOptics.com) and look up your model and configuration to confirm the main tube size for your rifle scope.

Use the lowest ring height that will provide complete clearance of scope and rifle, avoiding any contact with barrel, receiver, bolt handle, or any other part of the rifle. A low mounting will help assure proper cheek weld, aid in establishing a solid shooting position, and promote fast target acquisition.

### Eye Relief And Reticle Alignment

Install the bottom ring halves on the mounting base. Place the scope on the bottom ring halves and loosely install the upper ring halves. Before tightening the scope ring screws, adjust for comfortable eye relief:

1. Set the scope to maximum magnification.
2. Slide the scope as far forward in the rings as possible.
3. Look through the scope while in your normal shooting position and slowly slide the scope towards your eye. Stop sliding the scope when you see the full field of view.

**Note:** Keep the rings centered on the riflescope tube as much as possible. You may have to adjust where the rings are mounted on the rail to get both the correct mount and proper eye relief.

4. Without disturbing the front-back placement, rotate the scope until there is an exact match between the reticle's vertical crosshair and the rifle's vertical axis. Use a reticle leveling tool, a weight hung on a rope, flat feeler gauges, or a bubble level to help with this procedure.

**Note:** After aligning the reticle, tighten and torque the ring screws. Vortex Optics recommends a torque setting of 15-18 in/lbs on the ring screws. DO NOT use a thread locking compound on the threads. Thread locking agents lubricate the threads, which can increase the applied torque.



Use of bubble levels to square the riflescope (and reticle) to the base.

### Bore Sighting

Initial bore sighting of the riflescope will save time and money at the range. You can do this in a number of ways. Use a mechanical or laser bore sighter according to the manufacturer's instructions. On some rifles, you can bore sight by removing the bolt and sighting through the barrel.



#### To Visually Bore Sight A Rifle:

1. Place the rifle securely on a rest and remove the bolt.
2. Sight through the bore at a target approximately 100 yards away.
3. Move the rifle and rest until the target is visually centered inside the barrel.
4. With the target centered in the bore, make windage and elevation adjustments until the reticle crosshair is also centered over the target.

### Final Range Sight-In

After the riflescope has been bore sighted, you should do your final sight-in at the range, using the exact ammunition you expect to use while shooting. Sight-in and zero the riflescope at the preferred distance. 100 yards is the most common zero distance, although you may prefer a 200-yard zero for long-range applications.

- Following all safe shooting practices, fire a three-shot group as precisely as possible.
- Next, adjust the reticle to match the approximate center of the shot group (see section on Windage and Elevation Adjustment on page 5).

**Note:** If the rifle is securely mounted and cannot be moved, simply look through the scope and adjust the reticle until it is centered on the group.

- Carefully fire another three-shot group and see if the bullet group is centered on the bullseye.

Repeat this procedure as many times as necessary to achieve a perfect zero.

### Indexing the Turrets

The Crossfire® II riflescopes feature windage/elevation dials that allow you to reindex the zero indicator after sight-in without disturbing your settings. Though not required, this process will allow you to quickly return to your original zero if you dial temporary corrections in the field.

#### Index the turret as follows:

1. Remove the turret caps.
2. While firmly holding the dial, loosen and remove center screw.
3. Lift the turret dial off the scope. Align the zero on the turret dial with the index line.



4. Reinstall the turret dial and tighten the center screw while holding firmly to the turret dial.



## MAINTENANCE

### Cleaning

The Crossfire® II riflescope requires very little routine maintenance other than periodically cleaning the exterior lenses. Clean the scope's exterior by wiping with a soft, dry cloth. When cleaning the lenses, be sure to use products specifically designed for use on coated optical lenses.

- Be sure to blow away any dust or grit on the lenses prior to wiping the surfaces.
- Using your breath, or a very small amount of water or pure alcohol, can help remove stubborn things like dried water spots.
- Check out our cleaning kits at [VortexOptics.com](http://VortexOptics.com)

### Lubrication

All components of the Crossfire® II are permanently lubricated, so no additional lubricant should be applied. If possible, avoid exposing your riflescope to direct sunlight or any very hot location for long periods of time.

**Note:** Other than removing the turret caps and battery cap, do not attempt to disassemble any scope components. Disassembling the scope may void the warranty.

### Storage

If possible, avoid exposing your riflescope to direct sunlight or any very hot location for long periods of time.

## TROUBLESHOOTING

### Sighting-In Problems

Many times, problems thought to be with the scope are actually mount problems. Be sure you're using the correct base and rings in the correct orientation, and the base screws and rings are tight. Insufficient windage or elevation adjustment range may indicate problems with rings, base, base alignment, or barrel/receiver alignment.

### Check For Correct Base And Ring Alignment

- Roughly center the reticle by adjusting both windage and elevation turrets to the midpoint of their travel ranges.
- Attach bore sighter or remove bolt and visually boresight rifle.
- Look through the scope. If the reticle appears way off-center on the bore sighter image, or when compared to the visually centered target when looking through rifle's bore, there may be a problem with the bases or rings being used. Confirm you are using the correct base and rings in the proper orientation.

### Tips For Solving Bullet Grouping Problems

- Maintain a good shooting technique and use a solid rest.
- Check that all screws on rifle's action are properly tightened.
- Be sure rifle barrel and action are clean and free of excessive oil or copper fouling.
- Check that rings are correctly torqued per the manufacturer's instructions.
- Some rifles and ammunition don't work well together—try different ammunition and see if accuracy improves.



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