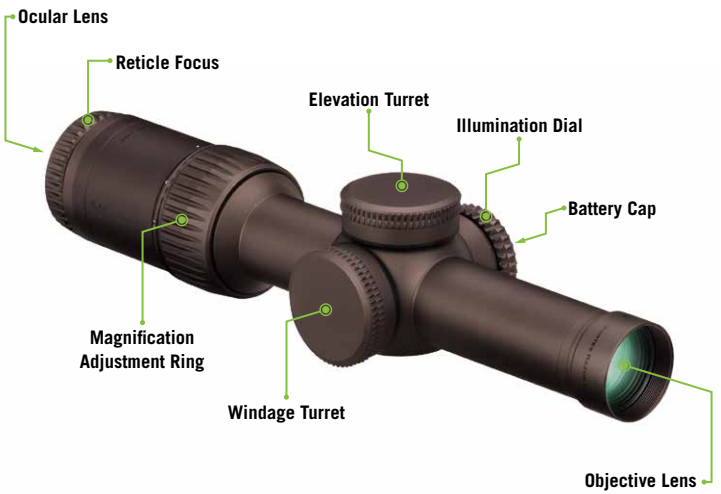
PRODUCT MANUAL

RAZOR® HD GEN II-E

RIFLESCOPE

RAZOR® HD GEN II-E 1-6x24 RIFLESCOPE

At Vortex®, the need for high-performance, precision optics is the driving force behind all that we do. We carefully built the Razor® HD Gen II-E riflescope to provide shooters with the ultimate short and medium range tactical riflescope.



US Patents 7,958,665

Dual Use: Shooting Tactical/ Hunting

Reticle Focal Plane (Second Focal Plane vs First Focal Plane)

All riflescope reticles can be termed either first focal plane (FFP) or second focal plane (SFP), with respect to the reticle's internal location within the erector system. An SFP reticle is visually consistent in size and weight across the magnification range; however the subtension values are only accurate on one magnification, typically the highest. In contrast, an FFP reticle will scale with magnification, and their subtensions used for ranging, holdovers, and wind corrections will remain constant. The reticle size will appear larger at higher magnifications, and smaller at low magnification.

The Razor® HD GEN II-E riflescope features a second focal plane reticle. SFP reticles are located within the riflescope near the magnification ring, in the back of the erector tube. This style of reticle will appear consistent throughout the entire magnification range.

Ocular Focus

The ocular focus is essentially 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

The Razor® HD Gen II-E 1-6x24 uses a Fast-Focus Eyepiece designed to easily adjust the focus on the riflescope's reticle.

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

Adjusting the reticle focus to your eye:

1. Turn the magnification ring to the highest power. Looking through the optic, turn the Fast-Focus Eyepiece counterclockwise until the reticle is slightly blurry.
2. While looking at a white wall or a clear blue sky, taking short glances through the optic, turn the Fast-Focus Eyepiece clockwise until the reticle is clear and crisp as soon as you look through the optic. This may take several attempts.

   Note: You do not want your eye to focus to the reticle, rather you want the reticle in focus to your eye instantly when looking through the optic. Looking away and letting your eyes refocus is important in getting the Fast-Focus Eyepiece set correctly.

You may notice that on 1x you have to make an additional adjustment to the diopter to achieve a flat field of view. This is specific to all 1x optics.

Adjusting the Reticle Focus for the Flattest Field of View on 1x:

- Turn the magnification ring to 1x. While looking at an object about 25 yards away, taking short glances through the optic, turn the Fast-Focus Eyepiece clockwise, until the image is true 1x. The object should appear the same size through the optic as it does to your naked eye. This may take several attempts.

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

Magnification

The magnification adjustment is used to change the riflescope's "power." The Razor® HD Gen II-E is a variable powered optic with an 6x optical design. This will allow you to change the power from 1x to 6x using the Magnification Adjustment Ring.

To adjust your optic's magnification, rotate the Magnification Adjustment Ring clockwise, or counterclockwise, to increase or decrease the magnification to your desired level.

TURRETS

Turrets are used to adjust the bullet's point of impact and are marked in either MOA or MRAD. Vortex® riflescopes incorporate precision, finger adjustable elevation and windage turrets with audible and tactile clicks.

Windage and Elevation Adjustment

To make adjustments:

1. Remove outer caps.
2. Turn the adjustment dial in the appropriate direction Up/Down or Left/Right indicated by the arrows.
3. Move the dials in the direction you wish the bullet's point of impact to change.

The Razor® HD Gen II-E riflescope uses clicks scaled in 1/2 minute of angle measurements (MOA). Each click will move the point of impact 1/2 MOA.

Note: 1/2 MOA equals approximately 0.52 inches for each 100 yards of distance (or 14.55mm at 100 meters)

1 MOA (2 CLICKS) EQUALS

100 YDS.	1.05 Inches	**100M**	29.1mm
200 YDS.	2.1 Inches	**200M**	58.2mm
300 YDS.	3.15 Inches	**300M**	87.3mm
400 YDS.	4.2 Inches	**400M**	116.4mm

Example: At a 200 yard sight-in distance, it will take five clicks of the dial to move a bullet's point of impact 5.25 inches.

Parallax Adjustment

The Razor® HD Gen II-E riflescope is non-adjustable for parallax correction and is set from the factory to be parallax-free at 100 yards (90 meters).

1. At distances under 100 yards, parallax error is less than 1 inch.
2. At distances over 100 yards, parallax error is minimal; using good, consistent shooting form and cheek weld will prevent most problems with parallax.

Illumination Adjustment

The Razor® HD Gen II-E riflescope uses an illuminated central dot to aid in low-light performance. Illumination intensity levels will vary from bright to very low intensity.

The illumination dial allows for 11 levels of brightness intensity; an off click between each level allows the shooter to turn the illumination off and return to a favored intensity level with just one click.

Pull illumination dial out to adjust intensity level.

Push illumination dial in to set intensity level.

RIFLESCOPE MOUNTING

To get the best performance from your riflescope, 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.

Please take note of the instructions on the following pages. For the proper scope mounting procedure go to VortexOptics.com/vortex-nation-videos for a video tutorial.

Riflescope Mounting Checklist

- Gun vise or a solid platform for your rifle
- Scope rings
- Torque wrench
- Reticle leveling tool(s) (such as feeler gauges, bubble levels, and a plumb bob)
- **Recommendation:** Pick up the Vortex® Torque Wrench Mounting Kit, which comes with the complete set of bits needed to install Vortex® scopes and rings.

Rings And Bases

The Razor® HD Gen II-E 1-6x24 features a 30mm main tube. Be sure to select a base and matching rings appropriate for your rifle and mount according to manufacturer's instructions.

Tip: Selecting the proper ring height to provide appropriate clearance between the riflescope and any part of the rifle is paramount. The proper height will also allow for a comfortable head position and aid in establishing a solid and consistent shooting position. The height of a ring will not have an adverse effect on accuracy and overall range or performance.

Eye Relief and Reticle Alignment

After installing the bottom ring halves on the mounting base, place the riflescope on the bottom ring halves and loosely install the upper ring halves. Before tightening the scope ring screws, adjust for maximum eye relief to avoid injury.

1. Set the riflescope to its highest magnification.
2. Move the riflescope fore and aft in the rings until you achieve a full, unobstructed sight picture.
3. Without disturbing the fore-aft placement, rotate the riflescope until the reticle is level. Use a leveling tool(s) such as feeler gauges or bubble levels and a plumb bob to aid in this process.
4. After leveling the reticle, tighten and torque the ring screws down per manufacturer's instructions. Use caution and do not over tighten ring screws.

   Note: We typically suggest 15-18 in.lbs of torque on the ring screws. If the mount/ring manufacturer suggests more or less, contact the Vortex Technical Department for best instructions. For base clamp screws on the rings/mounts, reference the ring manufacturer's specifications. We do not recommend liquid thread-locking compound on the ring screws.

If you have questions about a specific setup, please call our Technical Department at: 1-800-4VORTEX (1-800-486-7839) Ext. 5

Bore Sighting

Initial bore sighting of the riflescope will save time and money at the range. This can be done by using a mechanical or laser bore sight according to the manufacturer's instructions, or by removing the bolt and sighting through the barrel on some rifles.

To visually bore sight a rifle:

1. Place the rifle solidly 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.

Visually bore sighting a riflescope.

Final Range Sight-In

After the riflescope has been bore sighted, final sight-in should be done at the range using the exact ammunition you expect to use while hunting or shooting competitively. Sight-in and zero the riflescope at the preferred distance. 50 or 200 yards are the most common zero distances for this optic.

1. Following all safe shooting practices, fire a three-shot group as precisely as possible to determine an average point of impact to correct from. This will also help you establish the accuracy potential of the weapon system.
2. Adjust the turrets to correct for any offset in your point of impact. Be sure to read page 6 prior to adjusting.
3. Fire another three-shot group to establish another average point of impact. This procedure may be repeated as many times as necessary until your point of impact and your point of aim are in the same place, and you have achieved a perfect zero.

Note: Vortex® does not recommend the use of a weighted gun vise, as it can put extreme stress on the gun, stock, scope, and mounts. It is best practice to use a combination of sandbags or a bipod and sandbags. Letting your weapon recoil naturally also provides consistency from shot to shot.

Reindexing the Elevation and Windage Turrets

After the rifle and scope have been zeroed in, the elevation and windage dials should be reindexed to their zero indicators. This will allow you to accurately keep track of elevation or windage corrections dialed on the turrets in the field, and quickly return to an original zero-point setting.

To Reindex the Turrets

1. While holding the elevation/windage turret cap firmly between thumb and forefinger to prevent any rotation, use the 2mm hex wrench to loosen and remove the central screw on top of dial.
2. Gently pull the turret dial straight up and off of the turret post, being careful not to rotate the post.
3. Reinstall the turret dial, lining up the "0" mark with indexing mark on the scope body and replace the central screw on top of dial.
4. Replace the turret cap.

Remove the central screw.

Lift and remove turret cap.

Reinstall the cap, aligning "0" mark.

MAINTENANCE

Cleaning

Your Vortex® riflescope requires very little routine maintenance other than periodically cleaning the exterior lenses. The scope's exterior may be cleaned by wiping with a soft cloth. When cleaning the lenses, be sure to use products that are 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 dried water spots.

Lubrication

All components of the riflescope are permanently lubricated, so no additional lubricant should be applied.

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

Storage

If possible, avoid storing your scope in direct sunlight or any very hot location for long periods of time.

Replacing the Battery:

1. Unscrew the battery cap.
2. Remove the battery.
3. Replace with a new CR2032 battery with the positive (+) side facing out.
4. Reinstall the battery cap and be sure to fully tighten.

Battery Cap

TROUBLESHOOTING

Please consult the following list prior to returning a riflescope for service. Many times, a problem thought to be with the scope is a mounting issue. Be sure the correct rings and bases are being used and that they are properly torqued to the rifle. Be sure there is no free play in the scope, base, or rings.

Common Issues

Point of Impact is Inconsistent or Changes Drastically After Turret Adjustment.

- Verify that the ring screws are not over-torqued. Ring screws should only be torqued to Vortex® recommendations, and no thread-locking compound or lubricants should be applied. Over-torquing ring screws will cause excess pressure on the tube, which may cause problems when making turret adjustments.
- Remove the scope from the rings and visually check the scope tube for slide marks, and/or indentations from over-torqued, or out-of-spec rings.
- Ensure the rifle's action screws are tightened to the rifle manufacture's specification.
- Be sure that the base is tightened using thread-locking compound to the top of the rifle's receiver to manufacturer's specs.
- If using the scope on an AR style rifle, ensure that the cantilever mount/ rings are mounted only to the top of the receiver. The cantilever mount/ rings need to be mounted to a single, solid surface. Make sure the forward connection of the cantilever mount, or ring, is not mounted to the fore-end of the rifle.
- Be sure the rifle barrel and action are clean and free of excessive oil or copper and powder fouling.
- Some rifles and particular ammunition do not work well together. Try different ammunition and see if accuracy improves.

Insufficient Windage & Elevation Adjustment Range

- Be sure you have the proper base and rings for your rifle. If you need assistance, contact a local gunsmith or the Vortex Technical Department.
- Once you have verified you have the correct base and mounts, and that you have been properly fitted for your gun, make sure you have followed the correct mounting procedure. See riflescope mounting section on pages 8-11 for this procedure.
- Insufficient windage or elevation adjustment range usually indicates problems with the mounting, base mount holes drilled in the rifle's receiver, or barrel/receiver misalignment.

Reticle is Blurry/Cannot Focus on the Reticle and Target Simultaneously OR Image is Larger than 1x while on 1x on the Magnification Dial

- Check and reset the ocular focus for the shooter's eye. See Ocular Focus section on pages 4 and 5.

Reticle is Upside Down

- Riflescope is likely backwards. Confirm that you are looking through the larger end of the Razor® HD Gen II-E 1-6x24 riflescope.

Reticle is Moving the Wrong Direction

- The reticle will always move opposite of the turrets. Markings on the turrets indicate point of impact change. If you dial down on the turret, the reticle will move upward, forcing you to move the gun down, to change your point of impact in the downward direction.

VIP WARRANTY

OUR UNCONDITIONAL PROMISE TO YOU.

We promise to repair or replace the product. Absolutely free.

Unlimited.
Unconditional.
Lifetime Warranty.

Learn more at VortexOptics.com

service@VortexOptics.com • 1-800-4VORTEX

Note: The VIP Warranty does not cover loss, theft, deliberate damage, or cosmetic damage not affecting product performance.

For the most up to date manual visit VortexOptics.com