RAZOR® HD GEN II-E

1-6x24 RIFLESCOPE

US Patents 7,958,665
Dual Use: Shooting Tactical/ Hunting

The Vortex® Razor® HD Gen II-E 1–6x24 Riflescope

At Vortex® Optics, 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.

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Riflescope Adjustments

Reticle Focus Adjustment

The Vortex Razor HD Gen II-E 1–6x24 riflescope uses a fast focus eyepiece, designed to quickly and easily adjust the focus on the riflescope's reticle.

Rotate ring to adjust the reticle focus.

To adjust the reticle focus, look through the riflescope at a blank white wall or up at the sky. Turn the eyepiece focus dial in or out until the reticle image is as crisp as possible. Try to do this quickly, as your eye will try to compensate for an out of focus reticle.

Once this adjustment is complete, it is not necessary to re-focus every time the scope is used. However, as your eyesight may change over time you should re-check this adjustment periodically.

Warning

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

Windage and Elevation Adjustments

The Gen II-E 1–6x24 riflescope incorporates precision finger adjustable elevation and windage dials with audible clicks.

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 1–6x24 riflescope uses clicks scaled in 1/2 minute of angle measurements (MOAs) so each small click will move the point of impact 1/2 MOA. ***Note:*** 1/2 MOA equals .53 inches for each 100 yards of distance [14.55 mm at 100 meters].

1 MOA (2 clicks) equals:

- 1.05 inches at 100 yards [29.1 mm at 100 meters]
- 2.1 inches at 200 yards [58.2 mm at 200 meters]
- 3.15 inches at 300 yards [87.3 mm at 300 meters]
- 4.2 inches at 400 yards [116.4 mm at 400 meters], etc.

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.

Variable Power Adjustment

To change the magnification, turn the magnification ring to the desired level.

Parallax Adjustment

The Razor HD 1-6x24 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.

Rotate ring to adjust the magnification.

Illumination Adjustment

The Razor HD 1–6x24 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.

Battery Replacement

To change the battery, unscrew outer cap with a coin. Remove the battery and replace with a new CR 2032 battery.

Riflescope Mounting

To get the best performance from your Vortex Razor HD Gen II-E riflescope, proper mounting is essential. Although not difficult, the correct steps must be followed. *If you are unsure of your abilities, it would be best to use the services of a qualified gunsmith.*

Centering the Reticle

The Razor HD 1–6x24 riflescope is pre-set from the factory with the reticle in the center of the adjustment ranges. If you have changed the settings and wish to reset the reticle to the center, this can be done easily:

1. Turn the dial (windage or elevation) fully in either direction until stopped. *Do not force the dial—as soon as any resistance is felt, stop turning.*

2. Carefully counting the dial rotations, turn the dial in the other direction until stopped. *Again, stop turning as soon as resistance is felt.*

3. Turn the dial back again half the amount of rotations counted and that adjustment will be centered.

After this procedure is completed for both the windage and elevation dials, the reticle will be approximately centered.

Rings and Bases

Following the manufacturer's instructions, mount high quality base and rings to your firearm. The Razor HD 1–6x24 riflescope requires 30 mm rings.

Ring height for Razor HD 1–6x24 riflescopes will depend on the firearm and mount being used. Consult the ring and base manufacturer for suggested heights.

AR-style rifles will usually require an extra-high mounting height on a specialized cantilever-style mount such as the Vortex ADR-X cantilever ring mount (shown above).

Eye Relief and Reticle Alignment

Before the final tightening of the scope ring screws, adjust for maximum eye relief to avoid injury from recoil.

To make the adjustment:

1. Set the riflescope to the middle of its magnification range.

2. Slide the riflescope as far forward as possible in the rings.

3. While viewing through the riflescope in a normal shooting position, slowly slide the riflescope back towards the shooter's face—paying attention to the field of view. *Just as the full view is visible, stop.*

4. Without disturbing the front-back placement, rotate the riflescope until the vertical crosshair exactly matches the vertical axis of the rifle. Use a reticle leveling tool, plumb bob, or an adjustable set of feeler gauges placed between a one-piece base and the flat bottom of the riflescope's center section for this procedure.

5. After aligning the reticle, tighten and torque the ring screws down per the manufacturer's instructions. Use caution and do not over-tighten.

Example of Squaring the Riflescope
Use of an adjustable set of feeler gauges between a one-piece base and flat bottom section of the riflescope to square the riflescope (and reticle) to the base.

Sighting in the Rifle

Bore Sighting

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

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. With the target centered in the bore, make windage and elevation adjustments until the reticle crosshair is also centered over the target.

Range Sight-In

After bore-sighting the riflescope, select the exact ammunition you expect to hunt or shoot with and go to the range for the final sight-in.

1. Be sure to follow all safe shooting practices. Before shooting, be sure the reticle is in focus (see *Reticle Focus Adjustment* on page 4).

2. At your preferred zero distance, fire a three-shot group as precisely as possible.

3. Next, adjust the reticle to match the approximate center
of the shot group (see W*indage and Elevation Adjustment* on page 5).

4. If the rifle is very solidly mounted and cannot be moved, simply look through the scope and adjust the reticle until it is centered on the fired group.

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

If necessary, make another adjustment and fire another group to verify zero. This procedure can be repeated as many times as necessary to achieve a perfect zero.

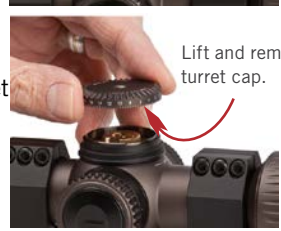
After the rifle and scope is zeroed in, the elevation and windage dials should be re-indexed to their zero indicators. This will allow you to accurately track elevation or windage corrections dialed in the field and quickly return to an original zero point setting.

After completing the final sight-in:

1. While holding the elevation turret cap firmly between thumb and forefinger to prevent any rotation, use the 2 mm hex wrench to loosen and remove the central screw on top of cap.

2. Carefully lift the turret cap straight up and off of the turret body.

3. Re-install the cap, turning so that the “0” mark aligns with the reference dot on the turret body.



4. Re-tighten the central screw while holding the turret cap firmly between thumb and forefinger to prevent rotation.

5. Repeat the same procedure on the windage turret if desired.


Re-install the cap, aligning “0” mark.

After making this adjustment, the turret cap’s zero mark will correspond with the 200-yard zero on the rifle.

Maintenance

Cleaning

The Razor HD riflescope requires very little routine maintenance other than periodically cleaning the exterior lenses. The exterior of the scope may be cleaned by wiping with a soft, dry cloth.

When cleaning the lenses, be sure to use products that are specifically designed for use on coated optical lenses.

1. Be sure to blow away any dust or grit on the lenses prior to wiping the surfaces.

2. Using your breath, or a very small amount of water or pure alcohol, can help remove stubborn things like dried water spots.

Lubrication

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

Note: Other than to remove the turret caps, do not attempt to disassemble any components of the riflescope. Disassembling of riflescope may void warranty.

Troubleshooting

Sighting-in Problems

Many times, problems thought to be with the scope are actually mount problems. Be sure the mounts are tight to the rifle and the scope is secured so it doesn't twist or move in the rings.

An insufficient windage or elevation adjustment range may indicate problems with the base mount, base mount holes drilled in the rifle's receiver, or barrel/receiver alignment.

Check for Correct Base and Ring Alignment

1. Re-center the scope reticle (see *Centering of the Reticle* on page 8).

2. Attach bore sighter, or remove bolt and visually boresight rifle.

3. 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 correct use ***and*** proper orientation of base and rings.

Grouping Problems

Many issues that can cause poor bullet grouping.

1. Maintain good shooting technique and use a solid rest.

2. Check that all screws on rifle's action are properly tightened.

3. Be sure rifle barrel and action are clean and free of excessive oil or copper fouling.

4. Check that rings are correctly torqued per the manufacturer's instructions.

5. Some rifles and ammunition don't work well together—try different ammunition and see if accuracy improves.

The VIP Warranty

We build optics based on our commitment to your absolute satisfaction. That's why Vortex products are unconditionally guaranteed and we make this Very Important Promise to you—a Very Important Person.

Rest assured that in the event your riflescope becomes damaged or defective, Vortex Optics will repair or replace the riflescope at no charge to you. Call Vortex Optics at 800-426-0048 or e-mail *service@vortexoptics.com* for prompt, professional, and friendly service.

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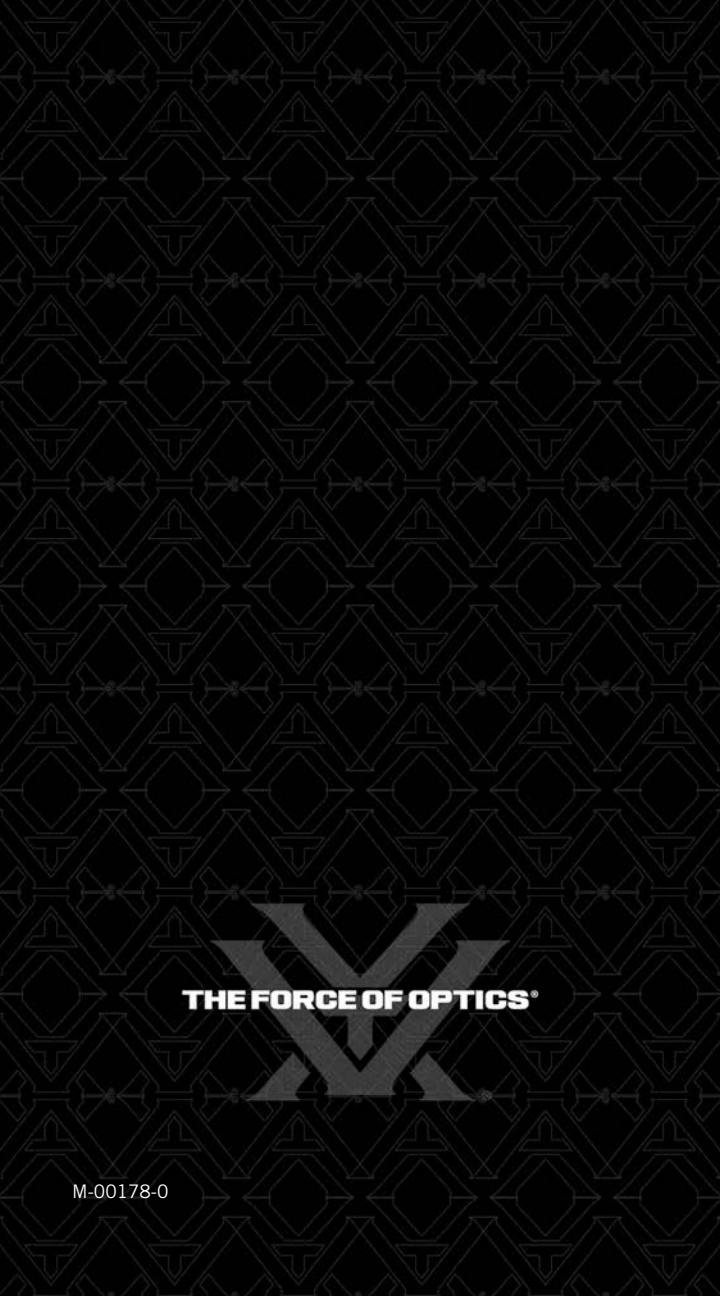
Visit ***www.vortexoptics.com*** for more information. Canadian customers may visit ***www.vortexcanada.net*** for customer service information.

Note: The VIP warranty does not cover theft, loss, or deliberate damage to the product.



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