VIPER® PST

RIFLESCOPE

VORTEX® OPTICS

The Vortex®Viper®PST™ Riflescope

Specifically designed for the tactical, law enforcement and committed precision shooting communities, the Viper® PST™ series of riflescopes offer the highest levels of performance and reliability. With features such as matched turret/reticle subtensions, RZR™ zero stop mechanisms and precision ranging reticles, the Viper PSTs are ready for any situation.

Dual Use: Shooting Tactical / Hunting
US Patent 8,166,696
US Patent 7,937,879

Reticle Options

The Focal Plane

All riflescope reticles can be termed either first focal plane (FFP) or second focal plane (SFP), depending upon their internal location within the riflescope. Many Viper PSTs are available in both reticle styles.

First Focal Plane Reticles

First focal plane (FFP) reticles are located near the windage and elevation turrets in front of the image-erecting and magnifying lenses. This style of reticle will visually grow and shrink as you change the magnification. The main advantage of an FFP reticle is that the reticle subtensions used for ranging, holdovers, and wind drift corrections are consistent at all magnifications. The reticle is heavier at higher magnifications and finer at lower magnifications.

Second Focal Plane Reticles

Second focal plane (SFP) reticles are located near the scope's 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 appearance.

For PST models using second focal plane reticles the listed reticle subtensions used for estimating range, holdover, and wind drift correction are only correct at the highest magnification.

Riflescope Adjustments

Reticle Focus Adjustment

Vortex Viper PST riflescopes use a fast focus eyepiece designed to quickly and easily adjust the focus on the riflescope's reticle.

To adjust the reticle focus:

1. Look through the riflescope at a blank white wall or up at the sky.
2. Turn the eyepiece focus knob in or out until the reticle image is as crisp as possible.

Adjust the reticle focus.

Note: Try to make this particular 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 re-focus every time you use the riflescope. However, because 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.

The Subtension Scale: MOA or MRAD

Depending on which version you have purchased, your Viper PST riflescope will feature adjustments and reticles scaled in MOAs or MRADs. If you are unsure of which scale is used, reference the top of the adjustment turret.

If the adjustment is in MOAs, the turret will display the travel per click in MOA.

If the adjustment is in MRADs, the turret will display the travel per click in MRAD.

Both minute-of-angle (MOA) and milliradian (MRAD) unit of arc scales are effective when ranging or adjusting riflescope for bullet trajectory.

MOA Adjustments

A minute of angle will subtend 1.05 inches at a distance of 100 yards. Viper PST riflescopes with MOA adjustments use ¼ minute clicks which subtend .26 inches at 100 yards / 7.3 mm at 100 meters, .52 inches at 200 yards / 14.6 mm at 200 meters, .78 inches at 300 yards / 21.8 at 300 meters, etc.

MRAD Adjustments

An MRAD will subtend 3.6 inches at a distance of 100 yards. Viper PST riflescopes with MRAD adjustments use .1 MRAD clicks which subtend .36 inches at 100 yards / 1 cm at 100 meters, .72 inches at 200 yards /2 cm at 200 meters, 1.08 inches at 300 yards / 3 cm at 300 meters, etc.

Windage and Elevation Adjustments

Vortex Viper PST riflescopes incorporate precision finger adjustable elevation and windage dials with audible clicks.

To make adjustments:

1. Turn the adjustment knob in the appropriate direction: Up/Down or Left/Right as indicated by the arrows.

2. Following the directional arrows, turn the knobs in the direction you wish the bullet's point-of-impact to go to.

EXAMPLE:

MOA Adjustments

With each click of the Viper PST moving the point-of-impact 1/4 MOA, four clicks of the knob will move a bullet's point-of-impact 1.05 inches at a 100 yard sight-in distance. At 100 meters, four clicks will move the point of impact 29.1 mm.

MRAD Adjustments

With each click of the Viper PST moving the point-of-impact .1 MRAD, four clicks will move the bullet's point-of-impact 1.44 inches at a 100 yard sight-in distance. At 100 meters, four clicks will move the point-of-impact four centimeters.

Image Focus and Parallax Correction

Select Viper PST riflescopes feature a side focus knob which should be used to fine-tune the image focus. When the image is sharply focused, parallax error will also be eliminated.

Using the Side Focus

1. Be sure the reticle is correctly focused
(see Reticle Focus section on page 6).

2. Turn the side focus knob until the target image is as sharp as possible. The yardage numbers referenced on knob should closely match the actual yardage to the target.

Side Focus Knob

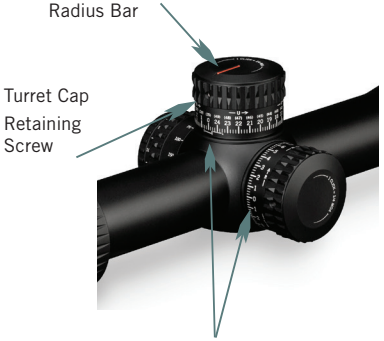
3. Check for parallax error by moving your head back and forth while looking through the scope. The focus is correct if there is no apparent shift of the reticle on the target. If you notice any shift, adjust the focus knob slightly until all shift is eliminated.

Parallax is a phenomenon that results when the target image does not quite 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-centered. Correctly focusing the target image will allow it to fall on the same optical plane as the reticle within the riflescope.

Turret Rotation

Vortex Viper PST riflescopes incorporate Vortex's patented Radius Bar to visually assist in keeping track of elevation turret rotations. The radius bar provides a quick visual reference that allows the shooter to confirm:

- Knob orientation is correct and has not shifted as a result of accidental contact.
- By watching the position of the bar while making elevation adjustments, the shooter is able to quickly track full, half and quarter rotations.



Variable Power Adjustments

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

Illumination Adjustments

The Vortex Viper PST riflescopes use a variable intensity reticle illumination system to aid in low light performance. To activate the illumination, rotate the adjustment knob in either direction.

The illumination knob allows for 10 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.

Replacing the Battery

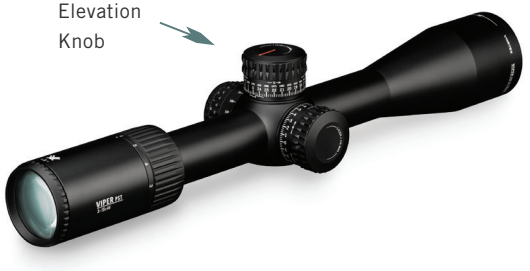
1. Unscrew the outer cap with a coin.
2. Remove the battery.
3. Replace with a new CR 2032 battery.
4. Re-install the outer battery cap and be sure to fully tighten it down.

RZR Zero Stop

Vortex Viper PST riflescopes incorporate the RZR Zero Stop feature. After the rifle is sighted in, the RZR Zero Stop allows fast, sure return to the original zero point when large multi-revolution elevation corrections have been dialed into the riflescope.

Without a zero stop, the shooter must pay very careful attention when dialing large corrections needing multiple revolutions of the elevation knob. If the shooter loses track of the number of revolutions, the original zero point may become lost. Because of the RZR Zero Stop, the elevation knob on Vortex Viper PST scopes can be quickly spun back to the original zero without having to carefully count revolutions.

Once the RZR Zero Stop is set, the elevation knob will stop turning at the original zero point when being returned from a temporary elevation correction. Learn how to adjust the RZR Zero Stop in the Boresighting and Range Sight-in sections on pages 12-15.



Boresighting

Initial boresighting of the riflescope will save time and money at the range. This can be done by removing the bolt and sighting through the barrel on a bolt action rifle, or using a mechanical or laser boresighter.

1. Begin by turning the elevation turret clockwise until it stops. No initial preparation is needed on the windage turret.

2. Loosen, but do not remove, the three elevation turret cap retaining screws.

3. Lift the elevation turret cap up and off the turret body. This will reveal the inner turret with marked scale to be used for sight in.

4. Next, loosen, but do not remove, the three elevation zero stop lock screws on the inner turret.

5. If using a mechanical or laser boresighter, set up according to manufacturer instructions.

6. Using the inner turret scale for elevation reference, make windage and elevation adjustments until the reticle crosshair is aligned with the adjustment pattern, target or laser dot.

Note that you will not feel “clicks” as the elevation knob is adjusted—this is normal. The “clicks” will return after final zero stop is set at the rifle range.

After rifle is boresighted, do not re-tighten elevation zero stop lock screws on inner turret or replace the outer turret cap. This will be done after the final range sight-in is complete.

Visually boresighting a rifle.

Range Sight-in and RZR Zero Stop Set

Once the riflescope has been boresighted, final sight-in and RZR Zero Stop set should be done at the range shooting the same ammunition expected to be used in the field. 100 yards is the most common zero distance, although a 200 yard zero may be preferred for long distance applications. **As previously noted in the section on Boresighting, the outer elevation turret cap should be removed and zero stop lock screws on inner turret should be loose.**

1. Be sure to follow all safe shooting practices.

2. Before shooting, be sure the reticle and side focus are properly set (see Reticle Focus Adjustment pg. 6, Image Focus pg. 8).

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

4. Next, adjust the reticle to match the approximate center of the shot group (see section on Windage and Elevation Adjustment). If the rifle is very solidly mounted and has not shifted you can 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. Repeat process until group is centered in desired spot.

6. Gradually tighten the three inner turret zero stop lock screws in an even pattern until firmly tight. If using torque wrench, tighten screws to approximately 8 in/lbs.

7. Replace elevation turret outer cap, being sure to align “0” mark on cap with the zero reference line on scope body. Push the cap straight down and avoid rotating while doing this. Be sure the cap is fully down.

8. Gradually tighten the three outer elevation cap retaining screws in an even pattern until firmly tight. If using torque wrench, tighten screws to approximately 8 in/lbs.

9. Check to be sure the zero stop is correctly set – elevation turret should not be able to rotate in clockwise direction.

Note: After setting, if zero stop does rotate clockwise or if you wish to re-zero a different load, repeat complete boresighting and range sight-in procedures. **It is very important to always begin any sight-in adjustments by turning elevation turret clockwise until fully stopped.**

Re-Indexing Windage Turret After Sight In

1. Loosen the three windage turret cap retaining screws and carefully pull the windage turret cap straight off.

2. Replace windage turret cap, aligning the "0" mark on cap with the zero reference line on scope body. Push the cap straight down and avoid rotating while doing this. Be sure the cap is fully down.

3. Gradually tighten the three retaining screws in an even pattern until firmly tight. If using torque wrench, tighten screws to approximately 8 in/lbs.

Aligning "0" marks.

Maintenance

Cleaning

The fully waterproof and fogproof Vortex Viper PST 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, such as the Vortex Fog Free cleaning products or Lens Pen, 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 things like dried water spots.

Lubrication

All components of the Vortex Viper PST riflescopes are permanently lubricated, so no additional lubricant should be applied.

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

Storage

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

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 Viper PST becomes damaged or defective, Vortex Optics will repair or replace the riflescope at no charge to you. Call Vortex Optics at 800-426-0048 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.

The VIP Warranty does not cover loss, theft, deliberate damage or cosmetic damage that does not hinder the performance of the product.

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