



RAZOR[®] HD LHT[™]

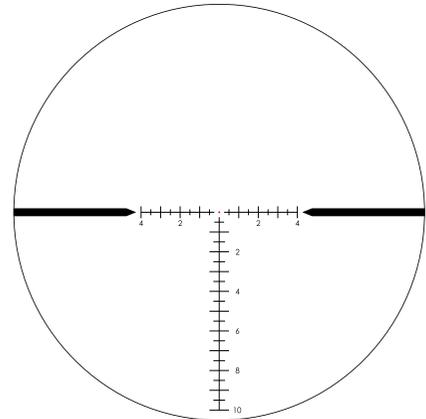
RIFLESCOPE

HSR-5i RETICLE | MRAD
SECOND FOCAL PLANE

RETICLE MANUAL

THE VORTEX® HSR-5i RETICLE

The HSR-5i is the ideal reticle for those who want enough information to utilize personalized ballistics, but prefer a clean look. A fine crosshair, coupled with MRAD-based hash marks (0.5 MRAD spacing), promotes fast and accurate shots from close to extended ranges. The HSR-5i reticle can be used to effectively determine ranges, holdovers, windage corrections, and moving target leads. Ultra precise laser etching on the glass reticle ensures that MRAD specifications can be kept to the tightest tolerances possible. The illuminated center dot on the HSR-5i reticle was carefully chosen to provide the optimum balance between precision aiming and low light visibility.



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

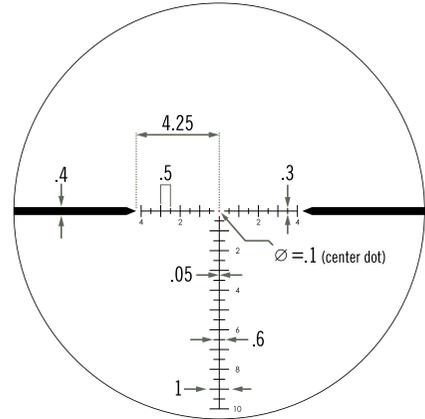
MRAD Subtensions

The HSR-5i reticle is based on the milliradian, or MRAD for short. MRAD unit of arc measurements are based on the radian. A radian is the angle subtended at the center of a circle by an arc that is equal in length to the radius of the circle. There are 6.283 radians in a circle and 1000 milliradians in a radian for a total of 6,283 milliradians (MRAD) in a circle. An MRAD will subtend 3.6" for each 100 yds. of distance (10cm per 100m).

Second Focal Plane Reticles

This Vortex® HSR-5i reticle is a Second Focal Plane design. Second Focal Plane (SFP) reticles do not visually change in size when you change the magnification and will always maintain an ideally-sized appearance. When using this SFP reticle it's very important to understand that the displayed reticle subtensions are only correct at the scopes highest magnification. If a shooter attempts to range or compensate for bullet-drop/wind drift using the marked reticle subtensions at a magnification other than the highest setting, error will result. The center crosshair zero is not affected by magnification, and does not change with the setting.

HSR-5i Reticle Subtensions



RANGING

MRAD reticles are effective for ranging using simple formulas:

MRAD Ranging Formula

$$\frac{\text{Target Size (yds.)} \times 1000}{\text{MRAD Read}} = \text{Range (yds.)}$$

$$\frac{\text{Target Size (m)} \times 1000}{\text{MRAD Read}} = \text{Range (m)}$$

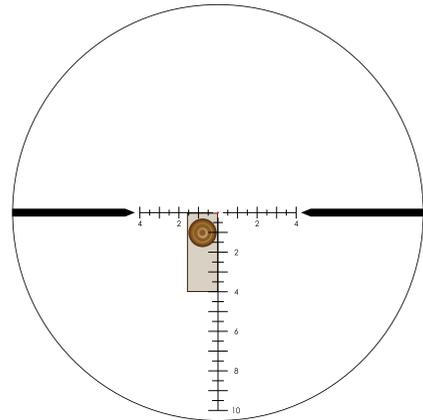
$$\frac{\text{Target Size (in.)} \times 27.8}{\text{MRAD Read}} = \text{Range (yds.)}$$

To use these formulas, you will need to know the measured size of the target or a nearby object. Using either the vertical or horizontal MRAD scale, place the reticle on the target of known measurement and read the number of MRAD spanned.

Accurate measuring will depend on a very steady hold—the rifle should be solidly braced using a rest, bipod or sling. Once you have an accurate MRAD reading, use any of the listed ranging formulas to calculate distance.

Maximum accuracy in ranging will be obtained by calculating exact MRAD measurements—MRAD should be estimated in tenths if possible.

Example



Ranging a 6' target (2 yds.) at 4 MRAD yields 500 yds.

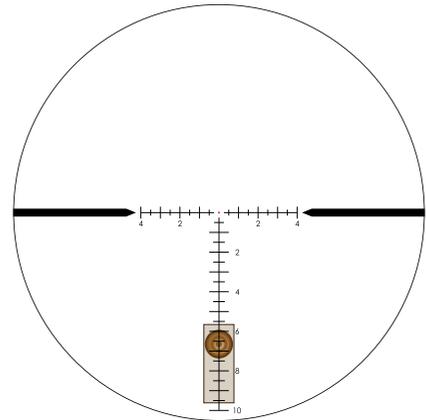
$$\frac{2 \text{ yds.} \times 1000}{4 \text{ MRAD}} = 500 \text{ yds.}$$

Elevation Holdovers

Once the distance has been calculated using the HSR-5i reticle, or a laser rangefinder, the HSR-5i can be used for rapid holdover correction for bullet-drop of the cartridge being used. To get the most benefit out of the HSR-5i equipped rifle scope, Vortex® Optics highly recommends shooters learn their bullet-drop numbers in MRAD rather than inches or MOAs. (Remember that 1 MRAD equals 3.44 MOA or 3.6" per 100 yds.).

Since the HSR-5i reticle is scaled in 0.5 MRAD increments, it is an easy job to quickly select the correct drop reference line once the shooter knows the bullet-drops in MRAD. If the shooter prefers to dial come ups for bullet-drop using the Elevation Turret, knowing bullet-drops in MRAD rather than inches will allow for much faster adjustments as the MRAD can be quickly read on the Elevation Turret.

Example



6.7 MRAD correction for 800 yd. shot. No wind.

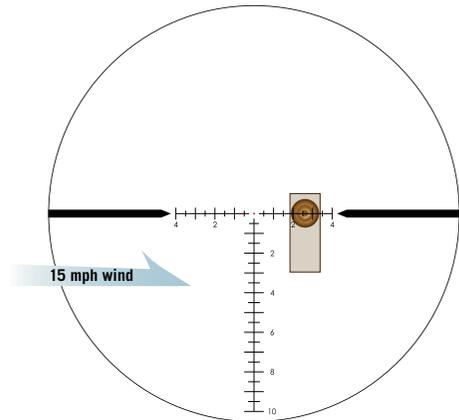
WINDAGE AND MOVING TARGETS

The HSR-5i reticle is highly effective when used for wind and moving target leads. Using the reticle for effective windage and moving target leads will require thorough knowledge of your weapon system's ballistic performance under varying conditions and experience in reading wind strengths and target speeds. As a bullet-drops, it is important for the shooter to learn a particular weapon's windage/moving target corrections in MRAD rather than inches. Always hold the reticle into the wind.

Basic Windage Correction on Center Crosshair

When dialing elevation, the center horizontal crosshair will be used for windage or moving lead corrections.

Example

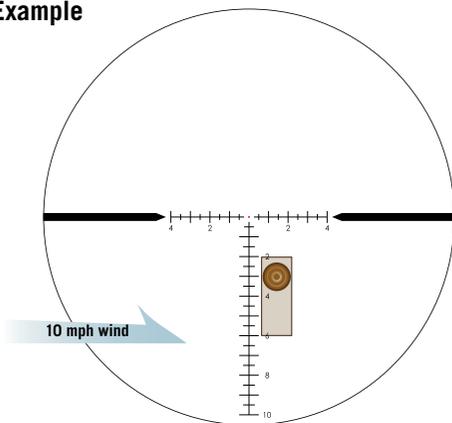


**2.6 MRAD correction for 15 mph wind at 700 yds.
Elevation already dialed into turret.**

Basic Windage Correction Using Drop Line on Reticle

When using the reticle for elevation correction rather than dialing, the MRAD marks on the center horizontal crosshair can still be used to help visually reference windage corrections. Remember to hold the reticle into the wind.

Example



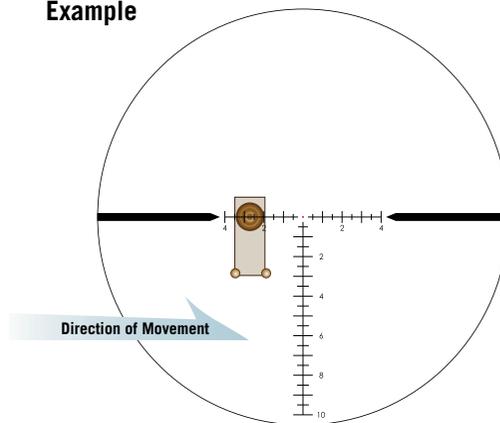
Using 3 MRAD drop line at 500 yds.,
1.5 MRAD correction for 10 mph wind.

Basic Moving Lead Correction

When estimating moving target leads, the MRAD marks on the center horizontal crosshair can be used. Estimating moving target leads will require knowing yardage distance, wind speed, moving target speed, and total bullet flight time (including rifle lock time). Bullet flight times can be roughly calculated based on fps velocities or a ballistic calculator.

NOTE: Correctly estimating moving leads is very difficult and requires considerable practice and knowledge beyond the scope of this manual.

Example



2.74 MRAD correction for a target moving at
3 mph at 800 yds. No wind.



VIP WARRANTY

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

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- ▶ **Unconditional**
- ▶ **Lifetime Warranty**

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



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