



# **VENOM<sup>®</sup>**

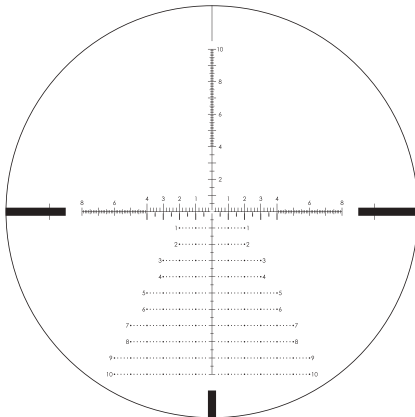
**RIFLESCOPE**

**EBR-7C RETICLE | MRAD  
FIRST FOCAL PLANE**

**RETICLE MANUAL**

## VORTEX® EBR-7C MRAD RETICLE

Designed to maximize long-distance shooting and ranging abilities, the EBR-7C MRAD reticle can be used to effectively determine ranges, holdovers, windage corrections, and moving target leads. Ultra-precision laser etching on the glass reticle ensures that MRAD specifications are kept to the tightest tolerances possible. The fine center crosshair subtensions on the EBR-7C MRAD reticle were carefully chosen to provide the optimum balance between precision aiming and low light visibility. Includes windage reference dots on drop lines.



## MRAD Subtensions

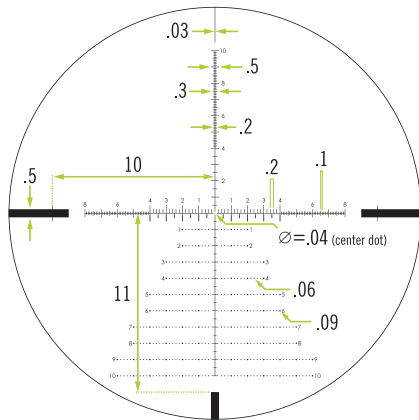
The EBR-7C MRAD reticle is based on the concept of the radian. When a section of the circumference of a circle is equal to its radius, the resulting angle is a radian. By dividing that angle into 1000 equal sections, the result is a milliradian. An MRAD is 1/1000th of any unit of measure. One MRAD will subtend 3.6" at a distance of 100 yds (10cm at 100 m).

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

## FIRST FOCAL PLANE RETICLES

In First Focal Plane riflescopes, the listed MRAD subtensions of the EBR-7C MRAD reticle are valid at all magnification levels. This means the shooter can use the magnification level most appropriate for the situation and still have effective holdover and windage reference marks. This is also extremely valuable in a high-stress situation, as the shooter does not have to remember to set the scope to one particular magnification to get valid holdovers—an action necessary with the more common Second Focal Plane reticles.

### Reticle Subtensions



### Ranging

MRAD reticles are effective for ranging using simple formulas:

#### MRAD Ranging Formulas

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

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

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

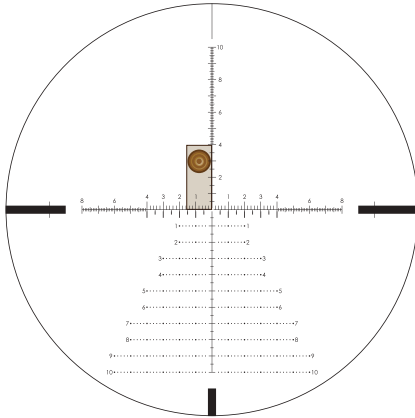
$$\frac{\text{Target Size (cm)} \times 10}{\text{MRAD Read}} = \text{Range (m)}$$

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.

Obtain maximum accuracy in ranging 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.

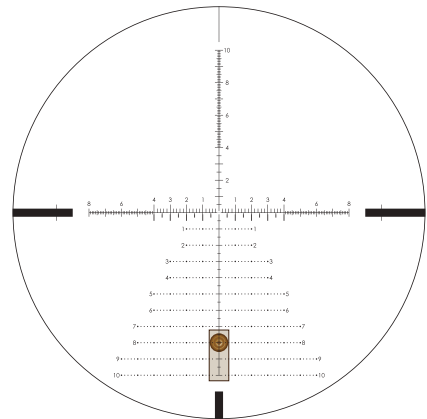
$$\frac{2 \text{ yds.} \times 1000}{4 \text{ MRAD}} = 500 \text{ yds.}$$

**Elevation Holdovers**

Once the distance has been calculated using the EBR-7C MRAD reticle or a laser rangefinder, use the reticle for rapid holdover correction for bullet-drop of the cartridge being used. To get the most benefit out of the EBR-7C, Vortex Optics highly recommends shooters learn their bullet-drop numbers in MRAD rather than inches or centimeters.

Since these reticles are scaled in MRAD, it is an easy job to quickly select the correct drop reference line once the shooter knows their bullet-drop and windage/lead corrections in MRAD. If the shooter prefers to dial for bullet-drop using the elevation turret, knowing bullet-drop in MRAD will allow for much faster adjustments as the MRAD can be quickly read on the elevation turret.

**Example**



**8 MRAD correction for 500 yd. shot. No wind.**

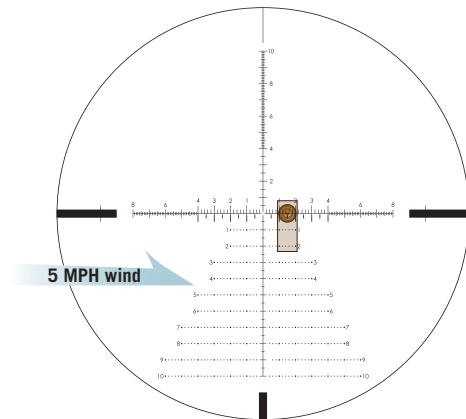
## WINDAGE AND MOVING TARGETS

The EBR-7C reticle is effective when used for wind and moving target leads. Using the reticle for windage and moving 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 with bullet-drop, it is imperative the shooter learns the particular weapon's windage/moving target corrections in MRAD.

### Basic Windage Correction on Center Crosshair

When dialing elevation, use the center horizontal crosshair for windage or moving lead corrections.

#### Example

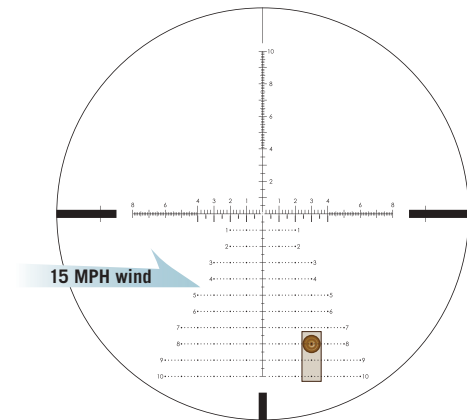


1.5 MRAD correction for 5 MPH wind at 700 yds.  
Elevation already dialed into turret.

### 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



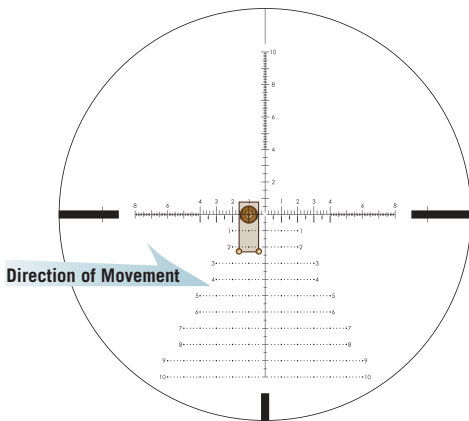
Using 8 MRAD drop line at 500 yds.,  
3 MRAD correction for 15 MPH wind.

## Basic Moving Lead Correction

When estimating moving target leads, use the MRAD marks on the center horizontal crosshair. Estimating moving leads will require knowing yardage distance, wind speed, moving target speed, and total bullet flight times 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



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

**1 MRAD correction for a target moving at 3 mph at 800 yds.  
No wind. Total bullet time of flight from trigger pull is 1.5  
seconds during which the target travels 6.6'.  
Elevation already dialed into turret.**

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