



RETICLE MANUAL

# **EBR-8 BDC MRAD RETICLE**

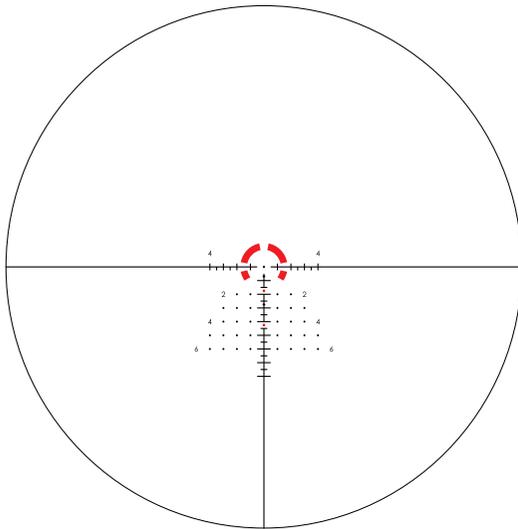
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**FIRST FOCAL PLANE  
ILLUMINATED**

## Illuminated EBR-8 BDC MRAD Reticle

Our exclusive EBR-8 BDC MRAD first focal plane, glass etched, illuminated reticle facilitates rapid shooting from point blank out to 600 yards with popular .223/5.56 and .308/7.62 loads.

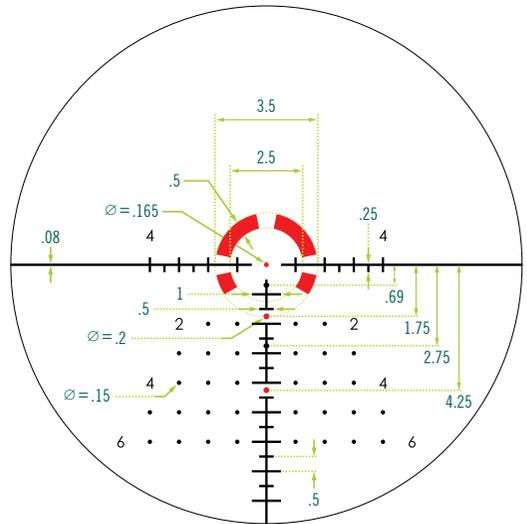
This reticle also can be used with a variety of other calibers and loads using BDC or hashmarks.



## MRAD Subtensions

The Illuminated EBR-8 BDC MRAD reticle is based on Milliradian (MRAD) subtensions. MRAD is an angular unit of measurement used to account for bullet drop, wind corrections, and range estimation. 1 MRAD will correspond to 3.6" for each 100 yards.

## Subtension Chart



**MRAD values are correct on all magnifications.**

**First Focal Plane Reticles**

This riflescope features a first focal plane (FFP) reticle. FFP reticles are located within the riflescope near the windage and elevation turrets. This style of reticle will appear to grow and shrink as you change magnification.

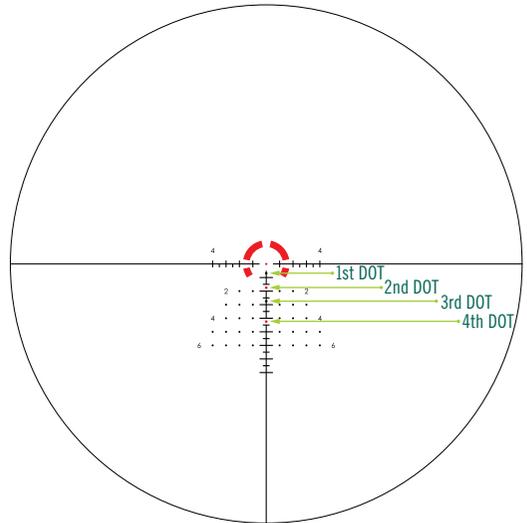


**Using the Reticle for Bullet Drop Compensation**

Most rifles will work well zeroed at 50/200 yards using the center dot. Consult the riflescope product manual for the sight-in procedure. For most popular .223/5.56 loads and .308/7.62 loads, the center dot will then provide good accuracy from 20 to 220 yards.

Not all dots in the BDC will be illuminated when illumination is turned on. Using the recommended calibers of .223/5.56, the dots that represent even yardages (200, 400, and 600 yards) will be illuminated, while the dots that represent odd yardages (300 and 500 yards) will not be. This helps to quickly identify which dot to use at further distances.

Use the lower dots when aiming at targets farther than your zero distance.



**STANDARD BULLET DROP FOR .223/5.56MM LOADS**

**.223/5.56mm, 60 gr., 3050 FPS Muzzle Velocity**  
 (Main crosshair zeroed at 50/200 yds.)

AIMING REFERENCE	DISTANCE	SUBTENSION
CENTER DOT	200 yds.	—
1st DOT	300 yds.	0.69 MRAD
2nd DOT	400 yds.	1.75 MRAD
3rd DOT	500 yds.	2.75 MRAD
4th DOT	600 yds.	4.25 MRAD

**STANDARD BULLET DROP FOR .308/7.62MM LOADS**

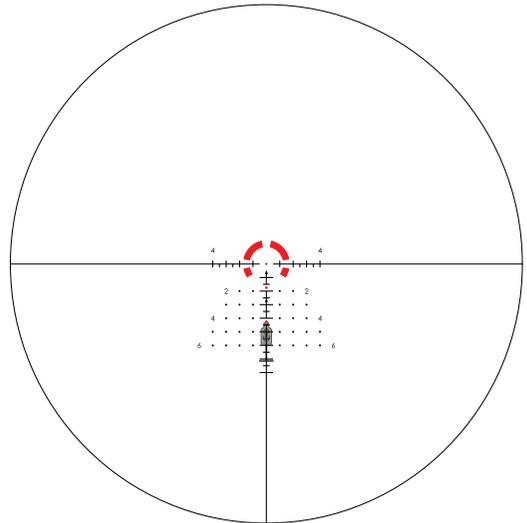
**.308/7.62mm, 168 gr., 2650 FPS Muzzle Velocity**  
 (Main crosshair zeroed at 50/200 yds.)

AIMING REFERENCE	DISTANCE	SUBTENSION
CENTER DOT	200 yds.	—
1st DOT	285 yds.	0.69 MRAD
2nd DOT	385 yds.	1.75 MRAD
3rd DOT	485 yds.	2.75 MRAD
4th DOT	600 yds.	4.25 MRAD

**Note:** Bullet Drop Compensating (BDC) reticles are designed to get rounds on target quickly. Distances will be approximate, and will change depending on the gun, load, and environmental conditions. Using the MRAD values for each hashmark you can figure out exactly where your specific load will line up with each hashmark. You are not limited to using a .223/5.56 or .308/7.62. The EBR-8 BDC MRAD reticle is a first focal plane reticle, therefore all the subtensions will be true throughout the entire magnification range.

**Elevation Holdovers**

If using a different cartridge or shooting at a different distance than outlined in the previous section correcting for bullet drop is easy with the EBR-8 BDC MRAD reticle's 0.5 MRAD hashmarks. The shooter uses the bullet's drop in MRAD and holds on the corresponding hashmark.



**Elevation correction at 700 yards and no wind.**

**Note:** If you wish to get the best accuracy, or have a caliber that is not listed, you can get more detailed ballistic data using the GeoBallistics® App.

## PRECISION TECHNIQUE

If you wish to get the best accuracy, or have a caliber that is not listed, you can get more detailed ballistic data using the GeoBallistics® App.

For detailed instructions, scan for a video detailing how to build a profile within the GeoBallistics® App.



GEOBALLISTICS®



SCAN QR CODE TO GET STARTED.

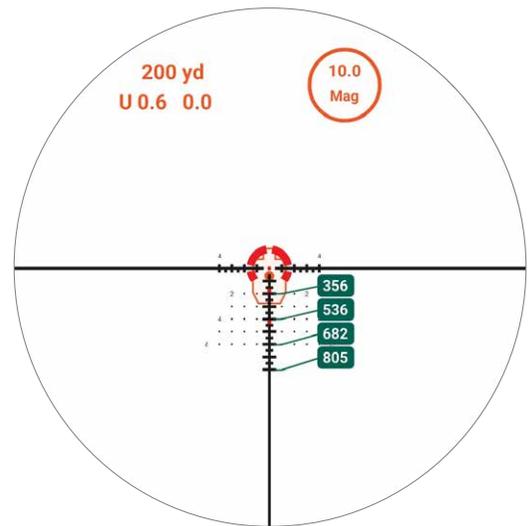
1. Now that you have built your profile, ensure your Vortex® riflescope and reticle have been selected within the Optic section of the rifle profile.
2. Set the range and input your environmental data within the app.
3. Open Reticle View from the GeoBallistics® quick-access menu.

**Note:** You can select your appropriate target from various shapes of steel and game targets from the drop-down menu.

**Note:** You can use the magnification slider to see how the target scales within the reticle.

**Tip:** For a more comprehensive ballistic solution, you can build your ballistic chart within the GeoBallistics® App. You can input your max shooting distance and the yardage increments you would like displayed. We recommend selecting a shooting distance farther than what you plan on shooting, and the smallest distance increments possible.

With GeoBallistics® Reticle View tool, you'll see exactly what each mark means—based on the ballistic performance of your cartridge—so you're never guessing at the range or in the field.



Example shown is for a 85 gr. .223 zeroed at 200 yards.

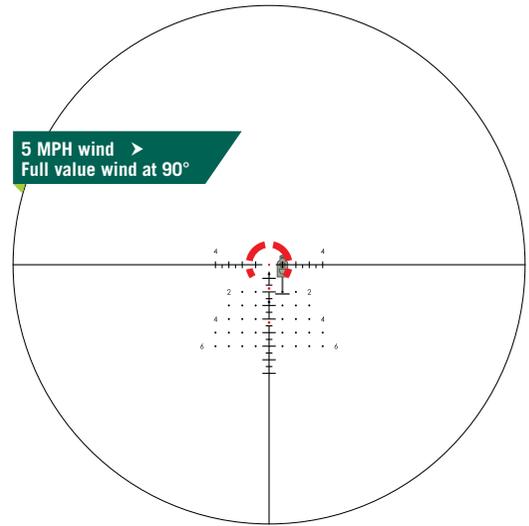
Range yd	Elev. MOA	Wind MOA	Vel. ft/s	Energy ft-lb
10.0	U 12.4	0.0	2577.6	1253.7
20.0	U 4.3	0.0	2555.3	1232.1
30.0	U 1.7	0.0	2533.1	1210.8
40.0	U 0.6	0.0	2511.0	1189.8
50.0	0.0	0.0	2489.0	1169.1
60.0	D 0.3	0.0	2467.2	1148.7
70.0	D 0.4	0.0	2445.5	1128.5
80.0	D 0.5	0.0	2423.9	1108.7
90.0	D 0.4	0.0	2402.3	1089.1
100.0	D 0.3	0.0	2380.9	1069.7
110.0	D 0.2	0.0	2359.6	1050.7
120.0	D 0.1	0.0	2338.4	1031.9
130.0	U 0.1	0.0	2317.4	1013.4
137.3	U 0.3	0.0	2302.0	1000.0
140.0	U 0.3	0.0	2296.4	995.1

### Windage and Moving Targets

Using the EBR-8 BDC MRAD reticle for effective windage and moving target leads will require thorough knowledge of your weapon system's ballistics performance under varying conditions and experience in reading wind and target speed. 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 Holdovers

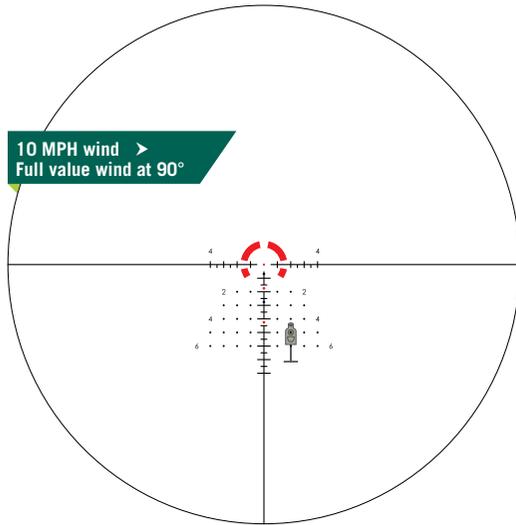
When dialing elevation, use the horizontal stadia line for windage or moving target lead corrections.



1 MRAD correction for 5 mph wind.

### Basic Windage and Elevation Correction Holdovers

When using the reticle for elevation and wind holds, you can use the windage and elevation dots to help visually reference your windage and elevation corrections. Remember to hold the reticle into the wind.



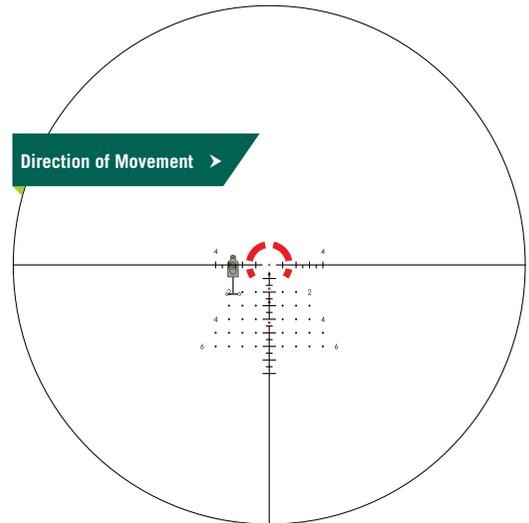
5 MRAD elevation correction at 700 yards.  
2 MRAD windage correction for 10 mph crosswind.

### Basic Moving Target Lead Correction

Estimating moving target leads will require knowing 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 difficult and requires practice and knowledge beyond the scope of this manual.

### Example



2.7 MRAD windage correction for a target moving 3 mph.

## RANGING

MRAD measurements are effective for ranging using a simple formula. To use this formula, the shooter needs to know the size of the target or nearby object in yards, inches, meters, or cm.

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

$$\frac{\text{Target Size (inches)}}{\text{Measured MRAD}} \times 27.77 = \text{Range (yds.)}$$

$$\frac{\text{Target Size (inches)}}{\text{Measured MRAD}} \times 25.4 = \text{Range (m)}$$

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

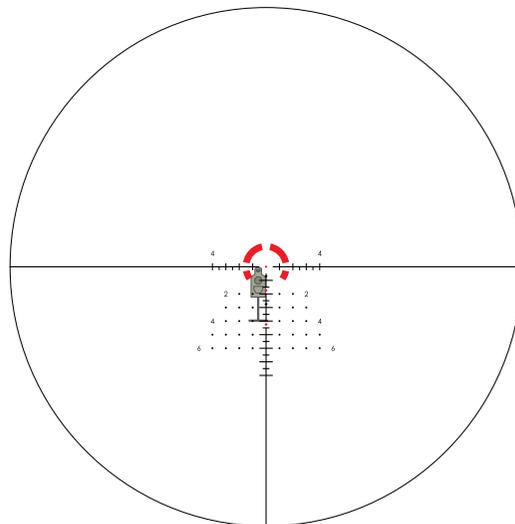
$$\frac{\text{Target Size (cm)}}{\text{Measured MRAD}} \times 10 = \text{Range (m)}$$

For the most accurate solution, use the longest dimension. If the object is taller than it is wide, it is best to use the object's height in the formula.

Using either a vertical or horizontal MRAD scale, place the reticle on a target of known dimensions and read the number of MRAD spanned. You will obtain the best results if measured to the nearest 1/10 MRAD.

Accurate measuring will depend on a very steady hold. The rifle should be firmly braced using a rest or bipod when measuring. Once you have an accurate MRAD reading, use the formula to calculate the distance.

### Ranging Example



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

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



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