



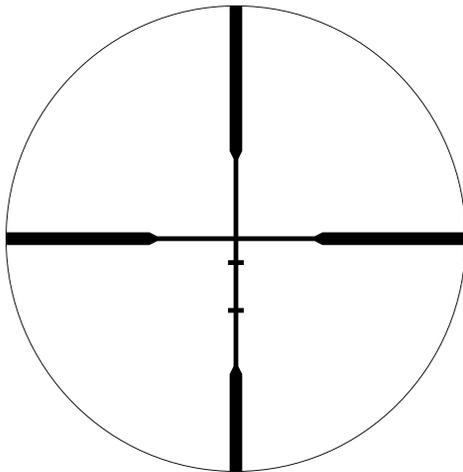
RETICLE MANUAL

MUZZLELOADER BDC
MOA RETICLE

SECOND FOCAL PLANE

MUZZLELOADER BDC MOA RETICLE

The exclusive Vortex® Muzzleloader BDC reticle is specifically calibrated for the slower velocities of modern muzzleloaders. This reticle ensures accurate holds at distance, giving you confidence in longer shots.

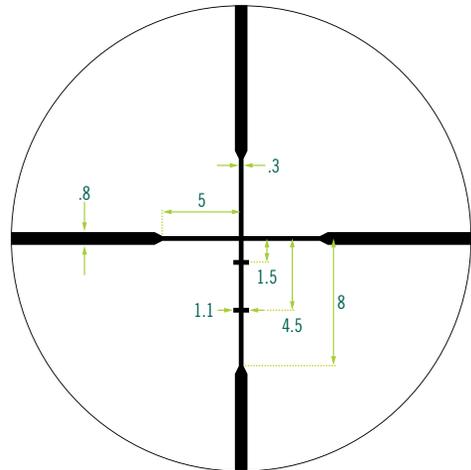


MOA Subtensions

The Muzzleloader BDC reticle is based on Minute of Angle (MOA) subtensions. MOA is an angular unit of measurement used to account for bullet drop, wind corrections, and range estimation. 1 MOA will correspond to 1.047" for each 100 yards.

Note: Although 1 MOA is very commonly corresponded to 1" at 100 yards, this is not correct. 1 MOA at 100 yards equals 1.047". Calling 1 MOA, 1" per hundred yards may be acceptable for short distance, but will result in a five percent error in ranging and holdovers. This could result in missed shots.

Subtension Chart

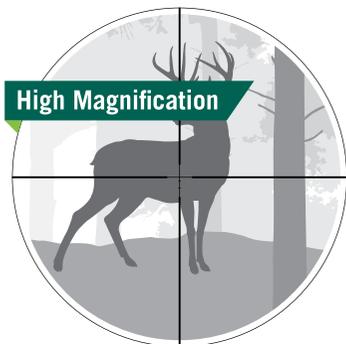
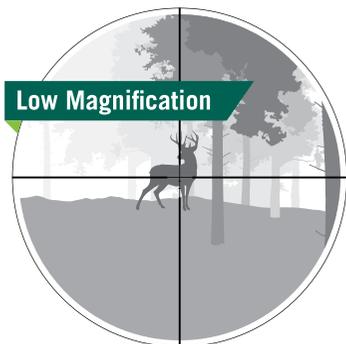


Note: The Muzzleloader BDC reticle is used in second focal plane (SFP) riflescopes. The MOA values are valid at the highest magnification on most models. Please check the Product Manual to ensure what magnification your optic needs to be on.

Note: Subtended magnification is the magnification to which the reticle is calibrated to and where all the stated values are correct.

Second Focal Plane Reticles

In second focal plane riflescopes, the listed MOA subtensions are calibrated to a specific magnification, typically the highest. The shooter can use the center crosshair on any magnification, but when using the hashmarks for longer range shots or windage corrections, the shooter must be on the calibrated magnification. If the shooter is not on the calibrated magnification, additional calculations must be done to determine the value of the hashmark.



Using the Reticle for Bullet-Drop Compensation

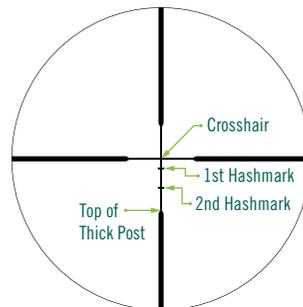
Rifle/ammo combinations are put into ballistic classes where bullet-drops will be predictable.

Begin by choosing one of the listed Firearm Classes. If your firearm does not fall exactly into one of these classes, select the class which is most similar, or use the Precision Technique detailed in the next section. Download the GeoBallistics® App for a handy tool to compare your bullet-drop numbers to the ones listed for each class.

After selecting a class, sight-in the crosshair at the recommended zero range for that class. (Consult the Product Manual for proper sight-in procedure). Once the rifle has been sighted-in, the lower hashmarks can be used as aiming points at the corresponding distances listed.

Note: Use the classes as a starting point, the values can be refined at the range or using a ballistic calculator. If you require greater accuracy or have a round that does not fall within one of the classes, use the Precision Technique detailed in the next section.

Remember the listed ranges will only apply with the riflescope set to the calibrated magnification. The center crosshair and its corresponding zero distance can always be used at any magnification.



.50 Cal, 270 gr, 50/50 Pellets -2**BC: .263, MV: 1760 fps, Barrel Twist: 1:28"**

(Crosshair zeroed at 50 yds.)

AIMING REFERENCE	DISTANCE	SUBTENSION
Crosshair	50 yds.	—
1st Hashmark	100 yds.	1.5 MOA
2nd Hashmark	150 yds.	4.5 MOA
Top of Thick Post	200 yds.	8 MOA

Load Suggestion:

Powerbelt .50 Cal, ELR, 270 gr
Hodgdon Triple Seven 50/50 Pellets - QTY 2

.50 Cal, 295 gr, 50/50 Pellets -2**BC: .186, MV: 1700 fps, Barrel Twist: 1:28"**

(Crosshair zeroed at 50 yds.)

AIMING REFERENCE	DISTANCE	SUBTENSION
Crosshair	50 yds.	—
1st Hashmark	90 yds.	1.5 MOA
2nd Hashmark	140 yds.	4.5 MOA
Top of Thick Post	180 yds.	8 MOA

Load Suggestion:

Powerbelt .50 Cal, Aerotip, 295 gr
Hodgdon Triple Seven 50/50 Pellets - QTY 2

.45 Cal, 285 gr, 45/50 Pellets -2**BC: .333, MV: 1820 fps, Barrel Twist: 1:22"**

(Crosshair zeroed at 50 yds.)

AIMING REFERENCE	DISTANCE	SUBTENSION
Crosshair	50 yds.	—
1st Hashmark	100 yds.	1.5 MOA
2nd Hashmark	160 yds.	4.5 MOA
Top of Thick Post	220 yds.	8 MOA

Load Suggestion:

Powerbelt .45 Cal, ELR, 285 gr
Hodgdon Triple Seven 45/50 Pellets - QTY 2

Note: Due to the tremendous differences in loads, these numbers should be viewed only as a representative sample. It is very important to validate these numbers at the range or a ballistic calculator before hunting.

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 the QR code for a video detailing how to build a profile within the GeoBallistics® App.



GEOBALLISTICS®



SCAN QR CODE TO GET STARTED.

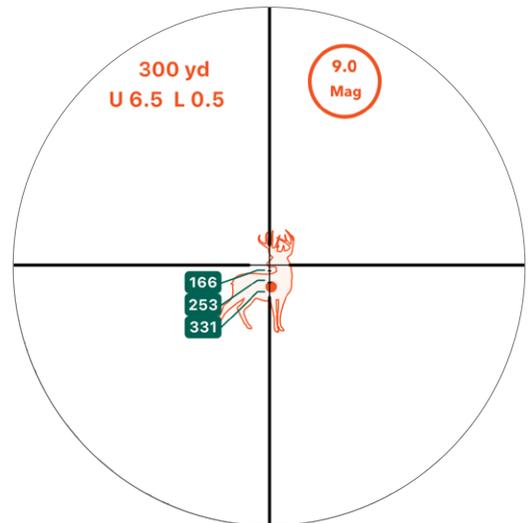
1. Now that you have built your profile, ensure your Vortex® riflescope and reticle have been selected within the Optic section of the rifle profile.
2. Set the range and input your environmental data within the app.
3. Open Reticle View from the GeoBallistics® quick-access menu.

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. As you adjust magnification, the distances associated with each of your subtensions will change as well. Remember, for second focal plane (SFP) reticles, the subtensions are accurate at the subtended magnification. Be sure to check your riflescope's product manual for confirmation on the subtended magnification.

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 300 gr.
.50 Cal Muzzleloader zeroed at 100 yds.**

Rifle 1

Range yd	Elev. MOA	Wind MOA	Vel. ft/s	Energy ft-lb
10.0	U 12.6	R 0.2	2561.1	4368.6
20.0	U 4.5	R 0.2	2522.6	4238.2
30.0	U 1.9	R 0.1	2484.4	4110.8
40.0	U 0.8	R 0.1	2446.6	3986.6
50.0	U 0.2	R 0.1	2409.1	3865.4
60.0	0.0	R 0.1	2371.9	3747.0
70.0	D 0.2	R 0.1	2335.1	3631.5
80.0	D 0.2	0.0	2298.5	3518.8
90.0	D 0.1	0.0	2262.3	3408.8
100.0	0.0	0.0	2226.5	3301.6
110.0	U 0.2	0.0	2190.9	3197.1
120.0	U 0.3	0.0	2155.7	3095.1
130.0	U 0.5	L 0.1	2120.8	2995.6
140.0	U 0.8	L 0.1	2086.2	2898.7
150.0	U 1.0	L 0.1	2051.9	2804.2

Long-Range Hunting

Vortex® believes strongly in responsible, ethical hunting and a word should be said about long-range shooting at game. Although reticles like the Muzzleloader BDC can make long-distance shots much easier, there are still many variables affecting every shot. It is important for hunters shooting at long distances to learn their personal effective range, particularly in windy conditions, and to not shoot at game beyond those distances. Please be responsible – the keys are knowing your rifle, ammunition, and your own abilities.



VIP® WARRANTY

OUR UNCONDITIONAL PROMISE TO YOU.

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

- ▶ **Unlimited.**
- ▶ **Unconditional.**
- ▶ **Lifetime Warranty.**

You do not have to register, save the box, or a receipt for the Warranty to be honored.

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

For the most up to date manual visit
VortexOptics.com



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