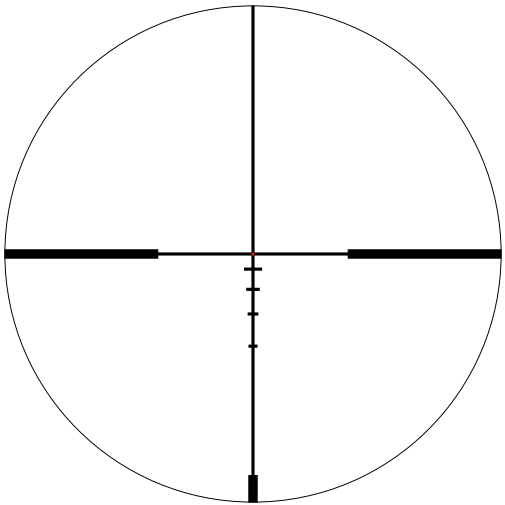
RETICLE MANUAL

JM-1 BDC
MOA RETICLE

SECOND FOCAL PLANE
ILLUMINATED

JM-1 BDC MOA RETICLE

Designed with input from world-renowned competitive shooter, instructor and gunsmith, Jerry Miculek. The Vortex® exclusive Illuminated JM-1 BDC MOA reticle facilitates rapid shooting at distances from 20 to 600 yards with popular .223/5.56mm and .308/7.62mm loads. The versatile JM-1 BDC reticle can also be used effectively with a wide variety of other firearms and loads using the Precision Technique outlined on page 7 of this manual.

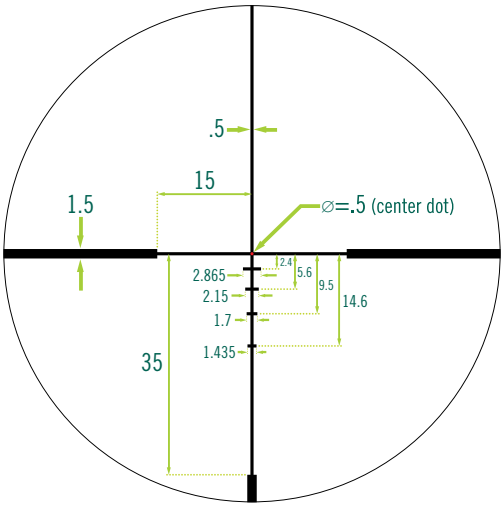


MOA Subtensions

The JM-1 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 distances but will result in a five percent error in ranging and holdovers. This could result in missed shots.

Subtension Chart

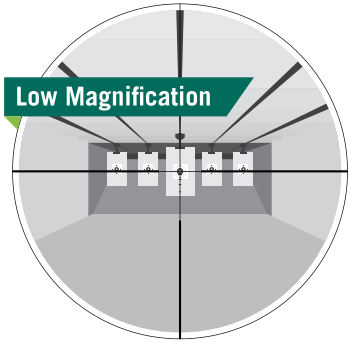


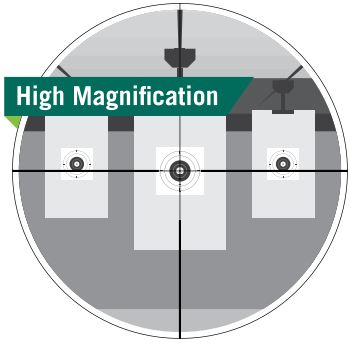
Note: The JM-1 BDC reticle is used in second focal plane (SFP) riflescopes. Most commonly, the MOA subtensions are valid at the highest magnification. Please check the Product Manual to confirm the subtended magnification for your riflescope.

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 made to determine the value of the hashmark.





Using the Reticle for Bullet-Drop Compensation

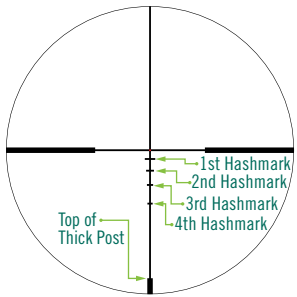
Rifle/ammo combinations are put into ballistic classes where bullet-drops will be predictable.

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.



STANDARD BULLET DROP FOR POPULAR 5.56 mm / .223 LOADS

5.56 mm / .223 55 - 77 Grain Boat Tail Bullets
2700 - 3000 FPS Muzzle Velocity
(Main crosshair zeroed at 200 yds.)

HASHMARK	DISTANCE	BULLET DROP
Zeroed	200 yds.	0"
1st	300 yds.	7.5"
2nd	400 yds.	23.5"
3rd	500 yds.	50"
4th	600 yds.	92"

STANDARD BULLET DROP FOR POPULAR 7.62 mm / .308 LOADS

7.62 mm / .308 Winchester 168 Grain Boat Tail Bullets
2650 FPS Muzzle Velocity

7.62 mm / .308 Winchester 175 Grain Boat Tail Bullets
2600 FPS Muzzle Velocity
(Main crosshair zeroed at 200 yds.)

HASHMARK	DISTANCE	BULLET DROP
Zeroed	200 yds.	0"
1st	285 yds.	7.2"
2nd	385 yds.	22"
3rd	485 yds.	47.4"
4th	600 yds.	92"

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 with your setup at the range or using a ballistic calculator.

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.

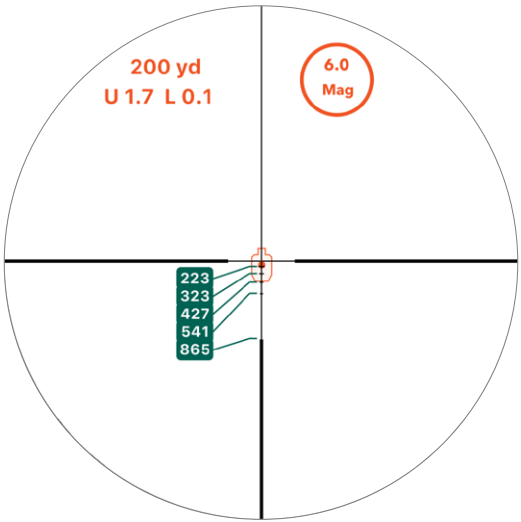
1. Now that you have built your profile, ensure your Vortex® riflescope and reticle have been selected within the Optic section of the rifle profile.
2. Set the range and input your environmental data within the app.
3. Open Reticle View from the GeoBallistics® quick-access menu.

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

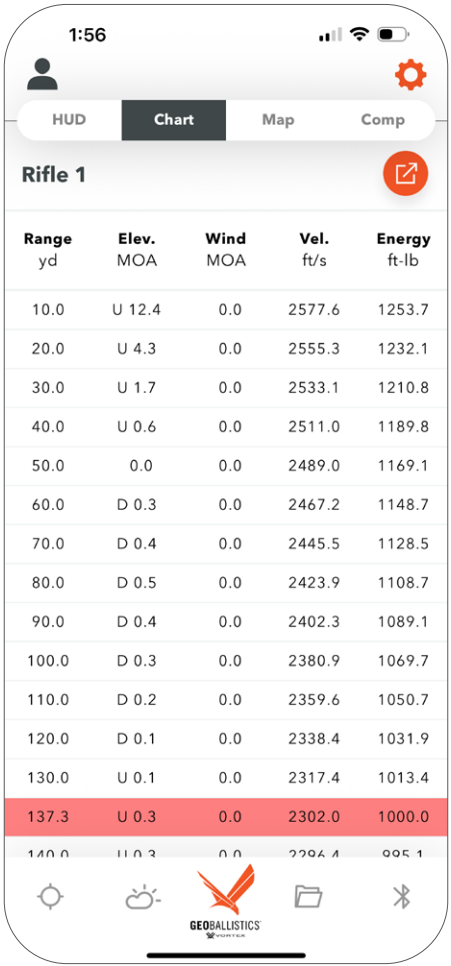
   Note: You can use the magnification slider to see how the target scales within the reticle. As you adjust magnification, the distances associated with each of your subtensions will change as well. Remember, for second focal plane (SFP) reticles, the subtensions are accurate at the subtended magnification. 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 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

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