RETICLE MANUAL

VECTOR OPTICS®

VEC-MBR

READ IT BEFORE USE!!!

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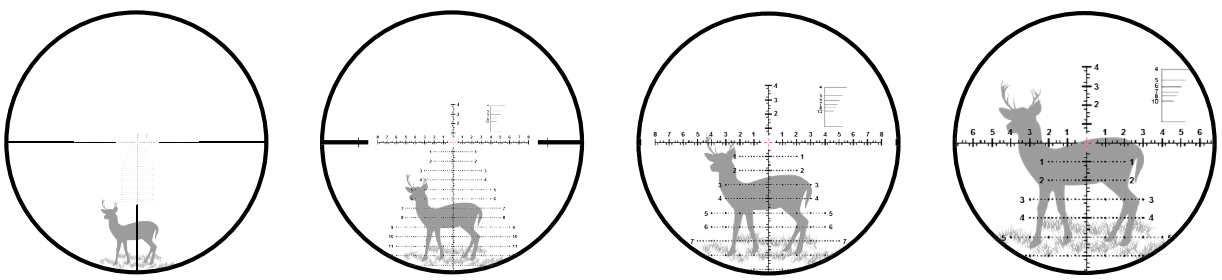
FIRST FOCAL PLANE RETICLES

A first focal plane (FFP) reticle is a type of reticle that is commonly used in long-range shooting.

These reticles are designed to change their size proportionally to the magnification of the scope. This means that the reticle remains accurate at any magnification, making it ideal for long-range shooting. In an FFP reticle, the reticle markings appear to grow and shrink as the magnification is adjusted, which allows for accurate holdovers and range estimations at any power setting.

Compared to the second focal plane (SFP) reticle, the FFP reticle offers greater versatility and accuracy. FFP reticles are particularly useful in tactical shooting scenarios where quick and precise adjustments need to be made.



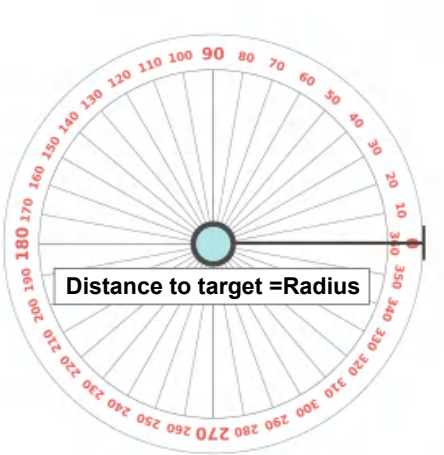
5x 10x 15x 20x

MILS / MRAD EXPLAINED

MILs, or milliradians, are a unit of measurement dividing radians in a circle. A radian is equal to 57.3 degrees, with 6.2832 (π x 2) radians in a circle. There are 1000 milliradians in 1 radian, and therefore 6,283 milliradians (or mils) in a circle.

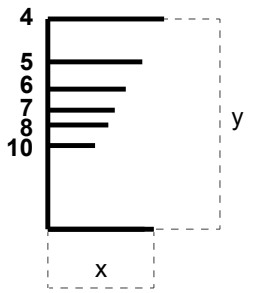
1 MIL equals 1/1000 of any shooting distance. So 1 MIL is 1 meter at 1000 meters, and 1 yard(36”) at 1000 yards. Then **1 MIL is approximately 10cm at 100m**, 20cm at 200m and so on. Likewise, **1MIL is approximately 3.6 inches at 100 yards**, 7.2 inches at 200 yards and so on.

A mil is so large that it's usually broken into tenths in order to make precise adjustments on your scope turret.



THE Vector Optics® VEC-MBR FFP MIL RETICLE

The **VEC-MBR** reticle consists of two parts. On the right side of the reticle, there's a small fast ranging reticle designed with a wide aspect ratio of width to height (0.5 : 1). By horizontally aligning the width of the target or vertically aligning the height of the target, an approximate distance can be obtained.



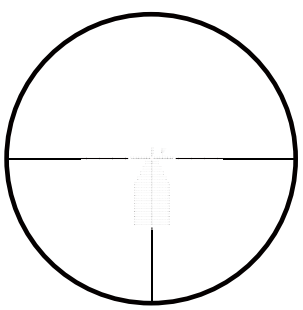
x:y = 0.5:1

The main part of the reticle is designed with a Christmas-tree style FFP (First Focal Plane) MIL scale, providing further precision in your shooting. It features an illuminated center cross and dot with digital lines and dots. The reticle is designed with MIL markings, which are used to measure the distance to the target and adjust the point of aim. It is suitable for long-range shooting, hunting, and tactical applications. It provides a clear and crisp image of the target and allows for quick and precise adjustments.

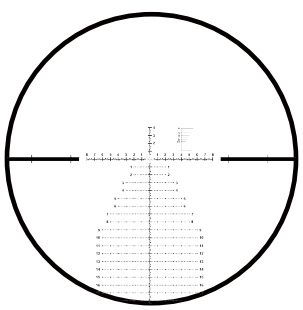
The center area of the Christmas-tree reticle is an illuminated center cross with dot, which is designed for precision shooting at mid to high magnifications. The center dot measures 0.06MIL, while each crosshair line is 0.3 mil long. The empty space surrounding the center dot has a diameter of 0.2 MIL, providing the user with constant average point-of-impact feedback within reasonable shooting distances.

The center cross with dot enables the shooter to have a clear and precise view of their target, especially at high magnifications. The center dot acts as a focal point, allowing for quick and accurate target acquisition. The crosshair lines provide a clear reference point for windage and elevation adjustments, allowing the shooter to make precise corrections.

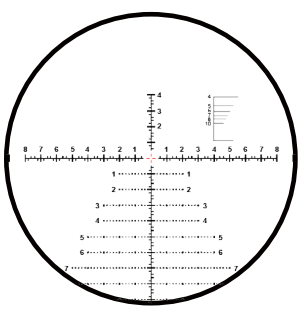
Take the magnification of CONTINENTAL 34MM 3-18x50 as an example:



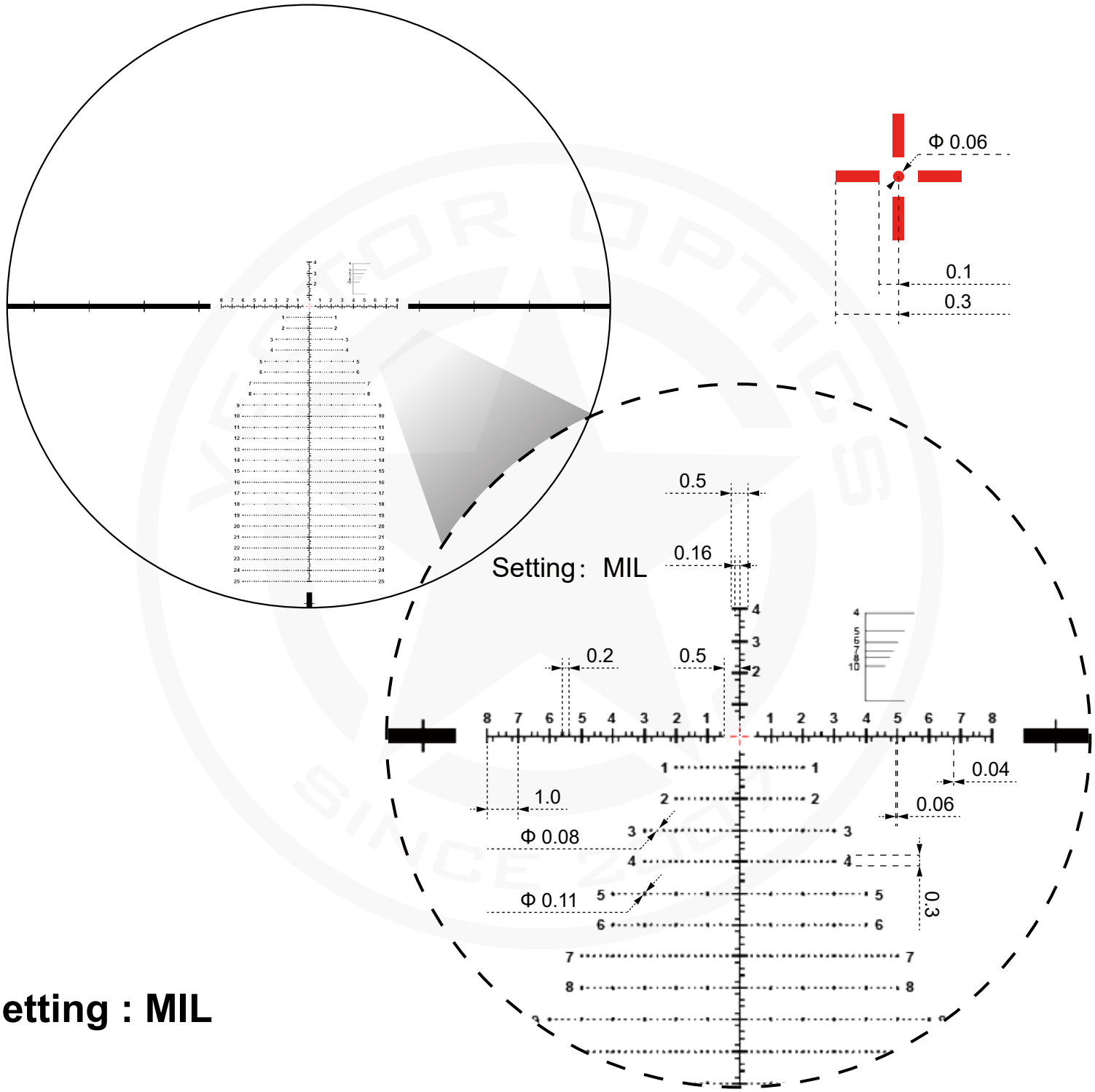
3x



9x



18x



Setting : MIL

WIND DRIFT COMPENSATION

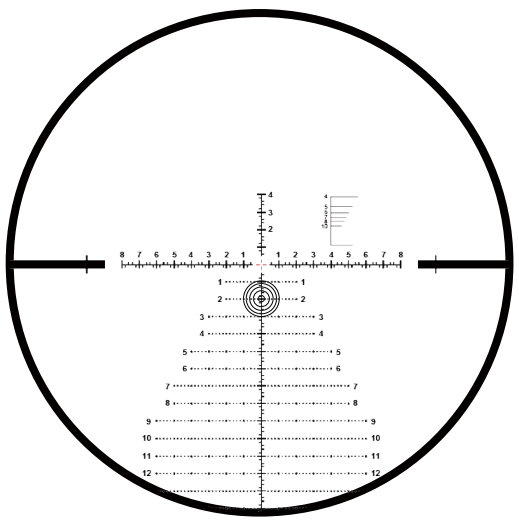
The VEC-MBR reticle can help the shooter compensate for wind drift. You can use the horizontal line width changes as reference points to complete wind drift compensation. To compensate for wind drift, first, estimate the wind's speed and direction. Then, using the line width changes, estimate the amount of holdover required to counteract the wind drift.

HOLDOVER FOR COMPENSATION BULLET DROP

Holdover refers to the technique of adjusting the aim of a firearm to compensate for the effect of gravity on the bullet's trajectory. Bullet drop is the decrease in bullet height as it travels through the air. The shooter can use the MIL markings on the reticle to calculate the bullet drop. The MIL markings on the vertical axis represent the distance in MILs between each hash mark. The horizontal axis represents the windage adjustment.

For example, under no wind condition, after zeroing your scope at 100m, if you know your target is at 500m and your ammo has a 1m bullet drop at that distance, you will need to use 2MIL holdover point. Here is how you get the 2MIL: since 1MIL equals 10cm at 100m, 50cm at 500m, and then 2MIL equals 2 x 50cm =1m at 500m, you need to hold the 2MIL drop point to compensate for the 1m bullet drop, thus bring the aim point to line up with the bullet's point of impact.

When it comes to wind correction in shooting, there are three key factors to keep in mind: the flying time of the bullet, the velocity and direction of the wind, and the ballistics coefficient (BC) of the bullet. By taking into account these three factors, a shooter can make the necessary adjustments to account for wind drift and achieve accurate shots even in challenging conditions.

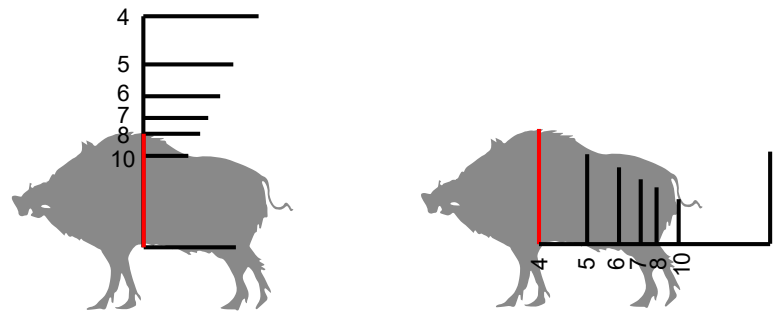


2MIL / 1m holdover for a target @ 500m out. No wind

RANGING WITH THE FAST RANGING RETICLE

The fast ranging reticle is used in riflescopes to help shooters estimate the range of their targets quickly. The height-to-width ratio of the reticle is 1:0.5, which means that the height of the reticle is twice the width of the reticle. You can achieve fast ranging by horizontally aligning the width of the target or vertically aligning the height of the target.

EXAMPLE



If you vertically align a wild boar's bottom belly to the bottom line, and its shoulder at highest point reaches mark 8 on the reticle, then the wild boar is 800 meters away from you.

If you rotate the scope, and align the wild boar's bottom belly to the vertical line, and its shoulder at highest point reaches mark 4 on the reticle, the range to the wild boar is 400mx2=800m.

RANGING WITH THE MIL-DOT RETICLE

The MIL is an angular measurement -- 1/6400th of a circle -- which equals almost precisely one yard at 1000 yards or one meter at 1000 meters. To use the Mil Dot Reticle for ranging, the shooter first needs to know the height of the target in question. Once the height of the target is determined, the shooter can use the Mil Dot Reticle to measure the target in mils. This proportional relationship makes possible a simple formula to compute distances:

Height of Target (yards) / mils * 1000 = Distance to Target (yards)

If the height of target is in Inches, then the formula should be:

Height of Target (inches) / mils * 27.78 = Distance to Target (yards)

(1 inch ≈ 0.0277778 yards)

This formula works equally well with meters, but don't mix meters and yards:

Height of Target (meters) / mils * 1000 = Distance to Target (meters)

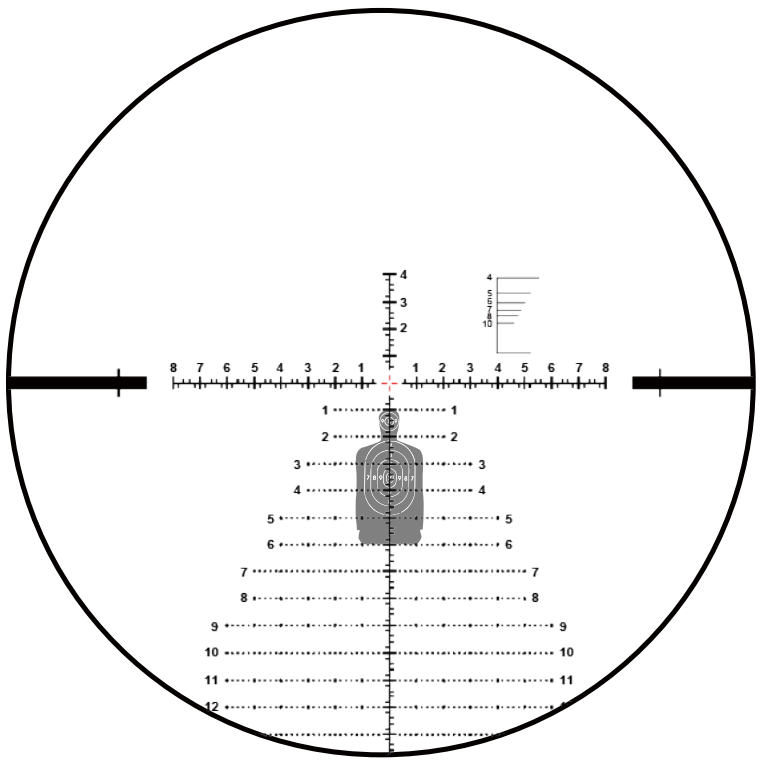
★ Measure the object in yards to find the distance in yards, and use meters to yield distances in meters.

HOW TO MEASURE TARGET HEIGHT

If the height of an adult male is 5.91ft, and measures 5Mils across the reticle, that is:

5.91ft = 70.9 inches

70.9(inches) / 5mil * 27.78 = 394 yards



HOW TO MEASURE TARGET HEIGHT

If the distance of the target is determined, then the shooter can use the Mil Dot Reticle to measure the target height. You can use the following formula:

Distance to Target (yards) / 1000 * Mils = Height of Target (yards)

Distance to Target (yards) / 27.78 * Mils = Height of Target (inches)

(1 inch ≈ 0.0277778 yards)

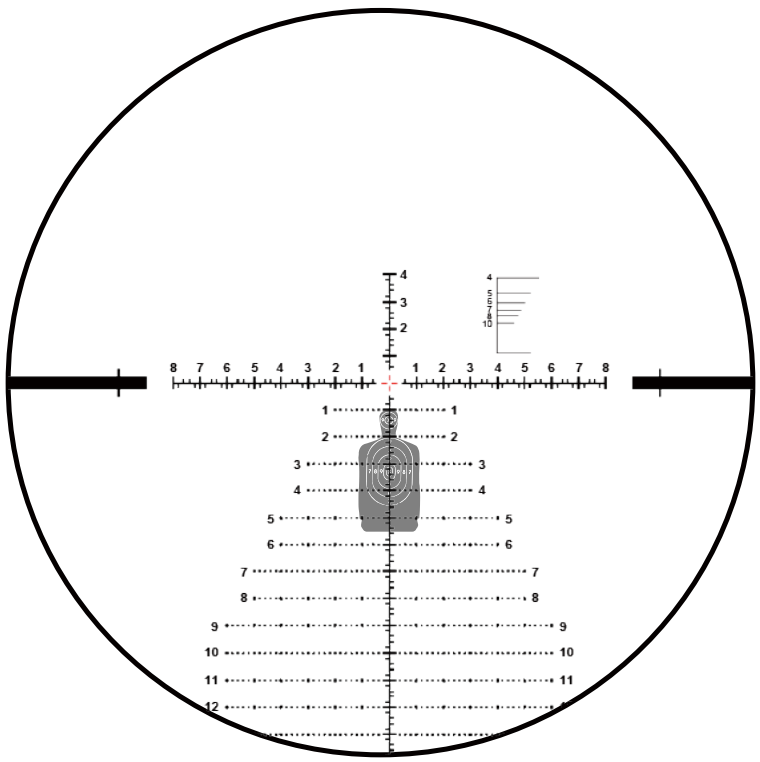
This formula works equally well with meters, but don't mix meters and yards:

Distance to Target(meters) / 1000 * Mils = Height of Target (meters)

EXAMPLE

If the Distance to Target is 400m, and the target measures 4.5Mils across the reticle, then the target height is:

400 (meters) / 1000 * 4.5 MIL = 1.8 (meters)



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