

VORTEX[®]
MIL DOT
RETICLE

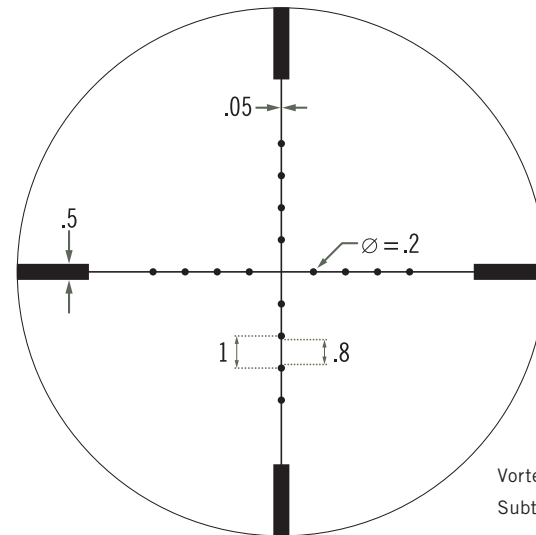
Second Focal Plane Reticle Manual



VORTEX® MIL DOT RETICLE

This is an extremely versatile reticle that allows high-precision shooting as well as distance estimation and compensation for long range bullet drop and wind drift.

It is very important to understand that your riflescope must be set to a magnification of 14x in order to use the listed subtensions correctly. The standard center crosshair can be used at any magnification.



Vortex Mil Dot Reticle
Subtensions

The Mil Dot and MRAD Measurements

The Vortex Mil Dot reticle features subtensions that are based on the radian. The terms *mil* and *mrاد* refer to a milliradian—a distance that equals 1/1000 of a radian.

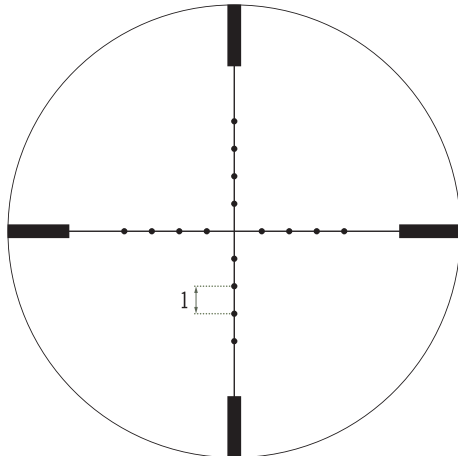
A radian is the angle subtended at the center of a circle by an arc that is equal in length to the radius of the circle. There are 6,283 radians in all circles and 1,000 milliradians in each radian. This calculates to a total of 6,283 milliradians in a circle. The mil dot reticle uses this angle and arc scale to estimate range and bullet trajectory drop.

A mil (mrad) will always subtend one unit of drop for each 1,000 units of distance.

Example

1 mil (mrad) will subtend 1 yard at 1,000 yards or 1 meter at 1,000 meters.

100 yards	3.6 inches	100 meters	10 cm
200 yards	7.2 inches	200 meters	20 cm
300 yards	10.8 inches	300 meters	30 cm
400 yards	14.4 inches	400 meters	40 cm
500 yards	18.0 inches	500 meters	50 cm
600 yards	21.6 inches	600 meters	60 cm
700 yards	25.2 inches	700 meters	70 cm
800 yards	28.8 inches	800 meters	80 cm
900 yards	32.4 inches	900 meters	90 cm
1,000 yards	1 yard	1,000 meters	1 meter



Ranging

In order for you to range using the reticle, you must know either the height or width of some portion of the target or a nearby object.

Known Dimension Examples

- A whitetail buck's brisket-to-back distance of 18 inches
- A standing ground hog height of 10 inches
- A target measuring 20 inches in diameter

Using your reticle, see how many mil (mrad) spaces span the portion of a known dimension and use this information in a simple formula to calculate the distance to your target.

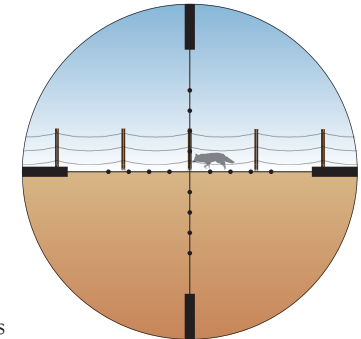
$$\frac{\text{Target's Known Width or Height in Yards} \times 1000}{\text{Target's Width or Height in Mills or MRADs as Measured on Reticle}} = \text{Range in Yards}$$

$$\frac{\text{Target's Known Width or Height in Meters} \times 1000}{\text{Target's Width or Height in Mills or MRADs as Measured on Reticle}} = \text{Range in Meters}$$

$$\frac{\text{Target's Known Width or Height in Inches} \times 27.8}{\text{Target's Width or Height in Mills or MRADs as Measured on Reticle}} = \text{Range in Yards}$$

Example

Let's say your target is a coyote and you know that a nearby fence post measures 36 inches in height. With your rifle scope set at the correct magnification, place the reticle on the fence post with the horizontal crosshair even with the ground. You see that the fence post spans 2 mils (mrad). Convert the 36-inch fence post height into yards and use the formula to calculate the distance to your target. In this case, your coyote is at a distance of 500 yards.



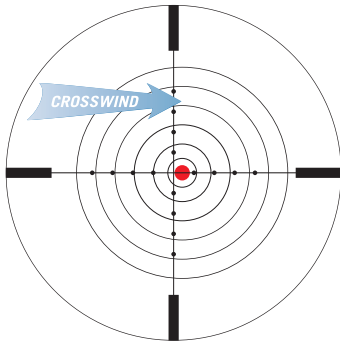
$$\frac{1 \text{ Yard (36")} \times 1000}{2 \text{ Mills (MRADs)}} = 500 \text{ Yards to Coyote}$$

Windage Compensation

The mil dot reticle can be used to compensate for bullet wind drift. You should have the mrad-based ballistic data available for your particular firearm and ammunition at all distances. As in ranging, you'll need to have your riflescope set at the correct magnification in order to accurately hold for wind.

Example

You'll be shooting at a target that is 400 yards away in what you estimate to be a 10 mph crosswind. Your ballistic data tells you that the bullet will drift .5 mrad in this crosswind. In order to correctly compensate for the crosswind and make your shot, you'll need to hold 1/2 mil into the wind.



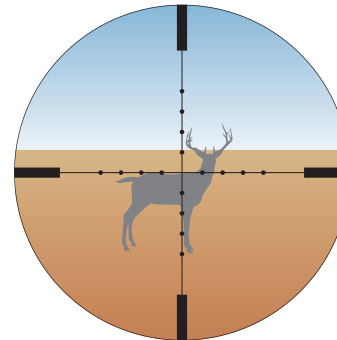
In this example of shooting at 400 yards in a 10 mph crosswind blowing from the left to the right, you would put the center of the crosshair 1/2 mil (mrad) to the left of your target.

Holdover

Once you have ranged a target, the mil dot reticle can be used to quickly estimate proper holdover on longer shots. You should have the mrad-based ballistic data available for your particular firearm and ammunition at all distances. As with ranging and windage compensation, you will need to have your riflescope set at the correct magnification.

Example

Let's say you've ranged a deer and determined that it is 300 yards away. Your rifle is zeroed in at 100 yards and your ballistic data tells you that your bullet will drop 1 mrad at 300 yards. Therefore, you'll need to hold the center crosshair 1 mil (mrad) higher than the deer's vital zone in order to make your shot.



At 300 yards, put the center of the crosshair 1 mil (mrad) higher than the deer's vitals.

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