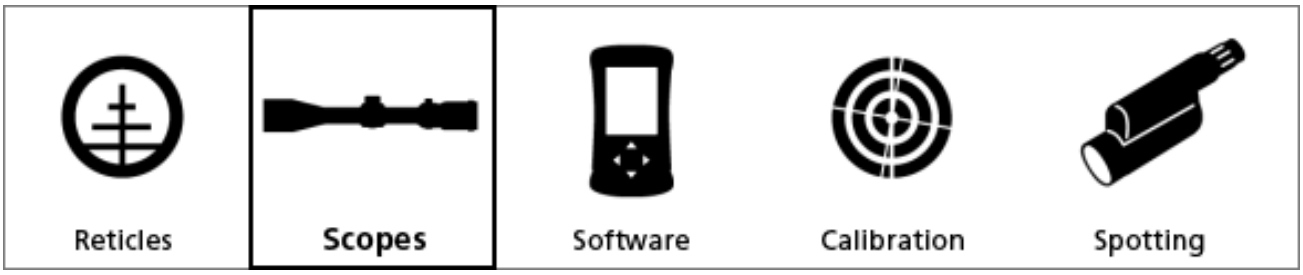



Horus Vision®

# HDMR

Model 2000 series

## User's Manual

**3rd Edition**
**February 2013**

HORUS™

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# INTRODUCTION

## ABOUT HORUS VISION

Horus Vision’s cutting-edge technology improves shooting accuracy at extended ranges and increases the likelihood of a first-round hit. Our patented reticles reduce the need for manual scope manipulation and mental calculation. Horus Vision’s simplified shooting system improves accuracy at any distance and can make anyone an expert marksman. Horus Vision’s ATrag™ ballistics software algorithms were developed and refined by the former chief of ARDEC's small-arms division, William C. Davis. Horus Vision was founded in 2000 and is headquartered in Lewiston, Idaho.

## SAFETY WARNING

Always use great care with all firearms. A mistake in judgment or lapse of attention can result in serious injury or death.

The information in this manual, while believed to be accurate at the date of publication, is not warranted or represented to be accurate, correct, or useful for any particular purpose. Use the information in this manual with caution and common sense, and verify it with respect to your own firearms before use.

The author and publishing company accept no responsibility for errors in the information presented herein, or for accidents, injuries, damage or any other problems which might arise as a result of your use of the information contained in this book, and expressly disclaim all liability for injuries, death and damages, whether direct, incidental, consequential, punitive or otherwise.

# GETTING STARTED

## MOUNTING YOUR HDMR SCOPE

The HDMR requires 34mm rings, which are available in steel and aluminum. Steel rings offer enhanced durability under extreme conditions, but they also weigh more. Rings are generally available in four different heights: low, medium, high and extra high. The choice depends upon your rifle's configuration and your normal body position on the rifle. Rings may come attached to a one-piece base or as separate units. Separate bases or other "riser" type mounting systems may also be used for raising scope height.

1. Mount the bottom portion of the rings to the rifle's mounting rail, making sure that the spacing is correct so the rings won't interfere with the scope's turrets.

2. Place the scope on the bottom portion of the rings, positioning it far enough rearward to provide a clear field of view (FOV).

3. Attach the top portion of the ring, tightening the screws enough to prevent the scope from falling out of the mounts, but loose enough to enable you to adjust the scope forward and aft and to rotate the scope to ensure a level reticle.

4. Focus the ocular by adjusting the rear-most ring on the eyepiece. The reticle should be crisp against a distant object or bright surface. The diopter is adjustable to +/- -2, +1 so the scope can be used with or without corrective lenses.

5. To establish proper eye relief, hold your rifle in a stable shooting position and close your eyes. Position the rifle into your shoulder as if firing, and then open your eyes. If the eye relief position is correct, you shouldn't see any black or hazy outer ring (vignette effect) within the FOV. If the image is not complete or clear, lower the rifle and gently slide the scope forward or aft in the rings, and then repeat the above exercise. It helps to have someone move the scope while you maintain position. Continue this procedure until the image is correctly viewed through the eyepiece when you open your eyes. Once you're satisfied that the scope is properly aligned on the rifle, repeat this exercise four or five times in quick succession to ensure that your positioning is correct. If you intend to fire from alternate positions regularly, check eye relief in those positions as well, since they'll change the relationships between shoulder, head and arms. Set up your eye relief for whatever body position you will most likely use the majority of the time.

6. Before tightening the top portion of the rings, place a spirit level on the elevation turret to check level against the rifle's receiver. If the rifle has a Picatinny top rail on the receiver, use that surface as the index to level the scope off of. If no rail is available, use the best horizontal surface you can find, such as the bottom metal portion of a bolt action with the floor plate open or magazine removed. While leveling the reticle by eye will work at close ranges, minor level errors will affect use of reticle grid and knob adjustments at farther targets.

7. When satisfied with eye relief and reticle level, tighten the scope ring screws to 15-20 inch-pounds of pressure. Over-tightening can damage the scope tube.

## ELEVATION AND WINDAGE TURRETS

The HDMR has locking turrets for finger-adjustable elevation and windage adjustments with audible clicks to eliminate the need to take your eyes off the target. The turrets adjust in the United States Department of Defense fashion; that is, rotate counter-clockwise for up/right adjustment (see ***Figure 1***).

Unlock the turret by pulling it out and away from the scope's body. Use the elevation turret on top of the scope to make adjustments for bullet drop compensation. Rotate the elevation turret counter-clockwise to move the intended point of impact (POI) up in the field of view. Use the windage turret on the right side of the scope to make adjustments for wind compensation. Rotate the windage turret counter-clockwise to move the intended POI right in the field of view, and rotate clockwise to move the POI left. Each increment (or click) equates to a 0.1 mil change to the bullet impact point, and 10 clicks is equal to 1 mil. When finished making adjustments, push the turret in to lock it into place.

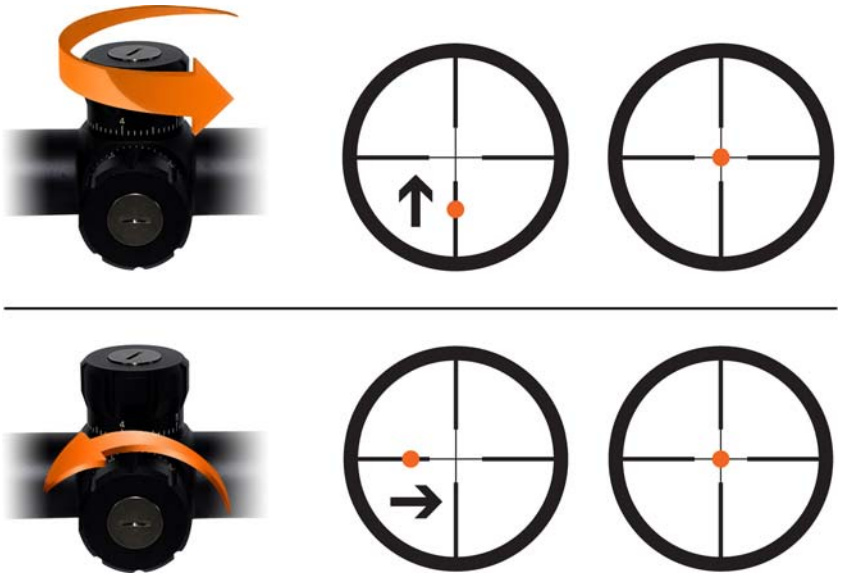


***Figure 1:*** *Rotating the elevation turret counter-clockwise will move the POI up in the field of view (top). Rotating the windage turret counter-clockwise will move the POI right in the field of view (bottom).*

## ZEROING YOUR HORUS SCOPE

While our scopes can be zeroed at any distance, it is recommended that the zero be exactly 100 meters or yards. Regardless of zero range, it is critical that the measurement be precise.

The following recommended method of zeroing will eliminate problems while saving time and ammunition:

1. Measure the distance from the rifle to the target to ensure a precise "zero" measurement.
2. Use an 18x18-inch (or larger) sheet of paper with ½-inch vertical and horizontal lines drawn to intersect at the center of the paper. Use a plumb or level to attach the paper to a target backer so that the lines are level.
3. Set your scope power ring to maximum power (21x), and make sure the elevation and windage turrets are set to 0.
4. Superimpose the Horus reticle over the vertical and horizontal lines on your target to center the reticle precisely on your intended point of impact (POI).

5. Fire your first shot. Adjust the elevation and windage turrets to center the shot at the intersection of the vertical and horizontal lines on the target. If the round's POI is observable, use the Horus reticle's mil-based grid to measure the deviation from the intended POI, then dial the exact corrections (in 0.1 mil increments) using the elevation and windage turrets. For example, if your first shot impacts 2 mils low and 1.5 mils right, dial 2 mils (20 clicks) up and 1.5 mils (15 clicks) left (see the previous section for information about rotating the turrets).

6. Center the reticle over your intended POI and fire another round. Repeat steps 5 and 6 until repeated shots are successfully centered at the intersection of the target's vertical and horizontal lines.

7. Fire a five round group at a clean target. Adjust zero as needed and confirm with additional groups until it perfectly matches your intended POI.

8. Lock the elevation and windage turrets into place by pushing them in toward the center of the scope. From this point on, use only the gridlines on the Horus reticle—not the turrets—to make adjustments for wind and elevation.

Remember to always verify your zero and develop data with the ammunition that you will be using for any sport shooting or hunting purpose.

## ADJUSTING FOR PARALLAX

Parallax is a perceived displacement or difference in the apparent position of an object viewed along two different lines of sight. In rifle scopes, parallax error occurs when the reticle and target are in different focal planes. This results in the reticle crosshairs appearing to move to different points on the target when your eye moves behind the scope's eyepiece.

To eliminate aiming errors caused by parallax, adjust the parallax adjustment (also called side focus) knob until the target appears in the same plane of focus as the reticle. This will give the appearance of the reticle crosshairs "painted" on your target, so you can be confident in an accurate shot. Even experienced shooters can significantly improve accuracy with proper parallax adjustment.

1. Once the scope is properly mounted and zeroed, securely position the rifle on a bench.

2. If you know the distance to the target, turn the knob so that the corresponding distance (in yards) lines up with the index mark on the body of the scope. If you don't know the distance to the target, first set the scope to the highest power (21x), and then turn the side focus knob until you see a sharp image of the target.

3. Look through the scope and shift your eye position from side-to-side and note if the crosshairs appear to move across the target.

4. Alternately turn the parallax adjustment knob and then shift your eye position, until you have eliminated the illusion that your crosshairs are moving across the target. It may take several tries before you've found the proper adjustment.

5. Fire a five round group at a clean target to see how much your grouping has improved.

## SLIPPING THE DIALS TO ZERO

Your Horus scope is designed to allow all deviations from zero for windage and elevation to be made within the reticle, as opposed to the conventional method of dialing windage and elevation turrets. You may elect to index the turrets on “0” once the rifle is zeroed to allow a return point for zero in the event you adjust the turrets for any reason. To set the dials to zero in this manner, loosen the turret bolt on top of the turret using a large coin, such as a quarter. Once the turret bolt is loose or removed, carefully pull the turret from its base. Rotate it until the “0” mark indexes on the thin white line, as depicted in ***Figure 2***, and push the turret back down into place. Take care not to inadvertently turn the turret while performing this procedure, as it will alter the scope’s zero point. Once the turret has been set to “0”, reinstall and tighten the bolt. Always verify zero after resetting the dials.

Important: Do not attempt to loosen the screws beneath the turret bolts of the windage and elevation turrets, as these are only to be removed by a Horus Vision authorized warranty station.


***Figure 2:*** *Slipping the elevation and adjustment turrets to “0” will provide a definitive index point to return to in the event you ever adjust them off zero.*

# INTRODUCTION TO HDMR MULTI-PURPOSE RIFLESCOPE

The HDMR 3.5-21x50 riflescope is meant for all current weapon platforms, multiple types of engagement, and versatile ranges of distance. Its long zoom ratio makes for an incredibly versatile scope. A joint offering with Bushnell Outdoor Products, the HDMR is a non-complicated, rugged, compact scope at a good price point. At roughly two pounds and a compact 13 inches, the HDMR is one of the lightest and shortest 34mm tube scopes on the market. The larger tube allows 26 mils of elevation (5 mils per revolution), adjustable in 1/10 mil clicks with large, locking turrets that are easily turned and has a crisp feel even through gloves. It has side parallax adjustment and high quality lenses with superior, anti-reflective, Ultra Wide Band Coating that delivers 95 percent light transmission. Made from hammer forged T6061 aluminum, the HDMR is 100 percent waterproof, fog proof, and shock proof. It's purged with Argon gas, decreasing the probability of seal corrosion.

***Table1.*** *HDMR features*

| **HDMR** |
| --- |
| 3.5-21x50mm power |
| Choice of non-illuminated reticle: H59, TReMoR2 |
| Rapid engagement reticle features:<br>• Moving target lead lines<br>• Elevation compensation using Accuracy 1st Speed Shooting markings |

## KEY USER CONTOLS


***Figure 3:*** *The HDMR multi-purpose rifle scope. Numbers correspond to key user controls in following list.*

1. Diopter adjustment ring
2. Zoom/power adjustment ring
3. Windage turret
4. Elevation turret
5. Parallax adjustment knob
6. One-piece, 34 mm main tube
7. 50 mm objective bell
8. Sunshade

## CHARACTERISTICS OF THE HDMR:

- Very low magnification, variable to high powers
- Rapid acquisition of targets
- High quality lenses with superior optical coatings, yielding sharp, crisp images in both bright and low light
- Light-weight, short scope with durable, one-piece 34mm tube
- Non-Illuminated reticles
- Accurate range-finding to within 0.2 mil
- Locking turrets in 1/10 mil clicks
- Large turrets for easy adjustments with gloved hands
- Large markings for readability in all conditions
- Innovative reticle that allows continuous sighting through the scope, eliminating the need to view ballistic drop compensation (BDC) or target turrets. No need to “dial in” elevation and windage adjustments for each shot
- Adjustable side parallax
- Rapid transition between targets at multiple ranges without altering the shooter’s cheek-to-stock “weld” or body position
- Innovative reticle that allows continuous sighting through the scope, eliminating the need to view ballistic drop compensation (BDC) or target turrets
- Fail-safe system for Second Shot Correction™ of observed impacts at highest magnifications
- Shooter and spotter system for accurate talk-on to targets (when using Horus reticles in both rifle and spotting scopes)
- Enhanced ability to self-spot for range-finding, windage, moving target leads and follow-up shots at highest magnifications
- Reticle placement in the first focal or image plane (1FP), allowing calibrated use of all mil measurements and holds at any magnification
- Milliradian-based/metric range finder and measuring scale
- Provides 3.5” eye relief

# H59 RETICLE

The HDMR can be purchased with either of two reticle choices: the H59 or TReMoR2. Both reticles offer advanced Speed-Shooting features not available in other Horus reticles, for rapid acquisition of targets out to 600 meters. Both reticles also feature the Standard Horus Grid, for dispatching targets from 0-1500 meters.

## Overview

The H59 is an improved sniper reticle, providing more windage and elevation hold capability than any optic in its class. Unobtrusive Holdover Dots extend the Standard Horus Grid while allowing for a clear uncluttered view. The H59's advanced features include Speed Shooting Drop Markers to rapidly engage targets without knowing range, and Moving Target Holds. The Standard Horus Grid is also included for traditional mil-based shooting.

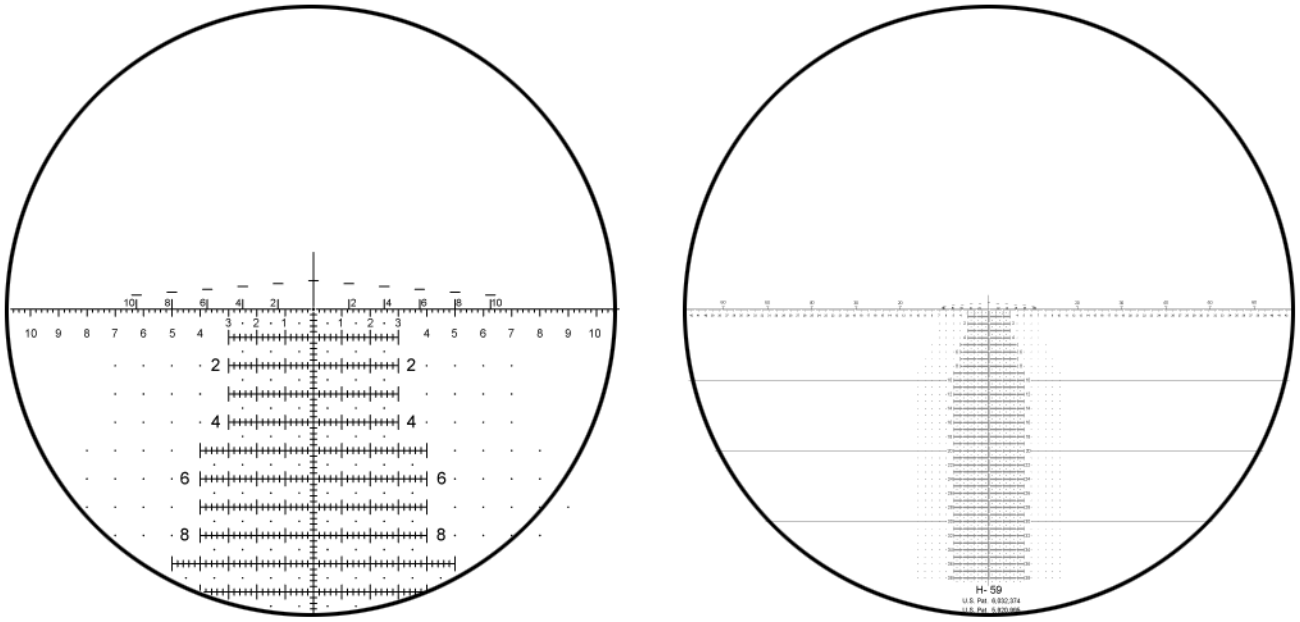



***Figure 4:*** *The H59 reticle shown at high magnification (LEFT) and low magnification (RIGHT).*

## MOVING TARGETS HOLDS

You'll notice in ***Figure 5*** that the H59 has a series of even numbers above the main horizontal stadia. These numbers represent speeds for moving targets at 2, 4, 6, 8 and 10 mph, with additional holds starting at 20 mils and continuing every 10 mph thereafter to the left and right. These speeds are optimized for .308 caliber, but may be used with many other calibers. To hold on a target moving at one of these speeds, simply hold the portion of the horizontal stadia that intersects with the short line nearest the number representing the target speed over the moving target, accounting for possible adjustments for distances different from optimal. If using the Horus grid (below center) for elevation, use a hold point in line with the appropriate speed. To hold on a target traveling at a speed between markings (such as 5 mph) you hold between the even numbers on either side of it (4 and 6 mph).

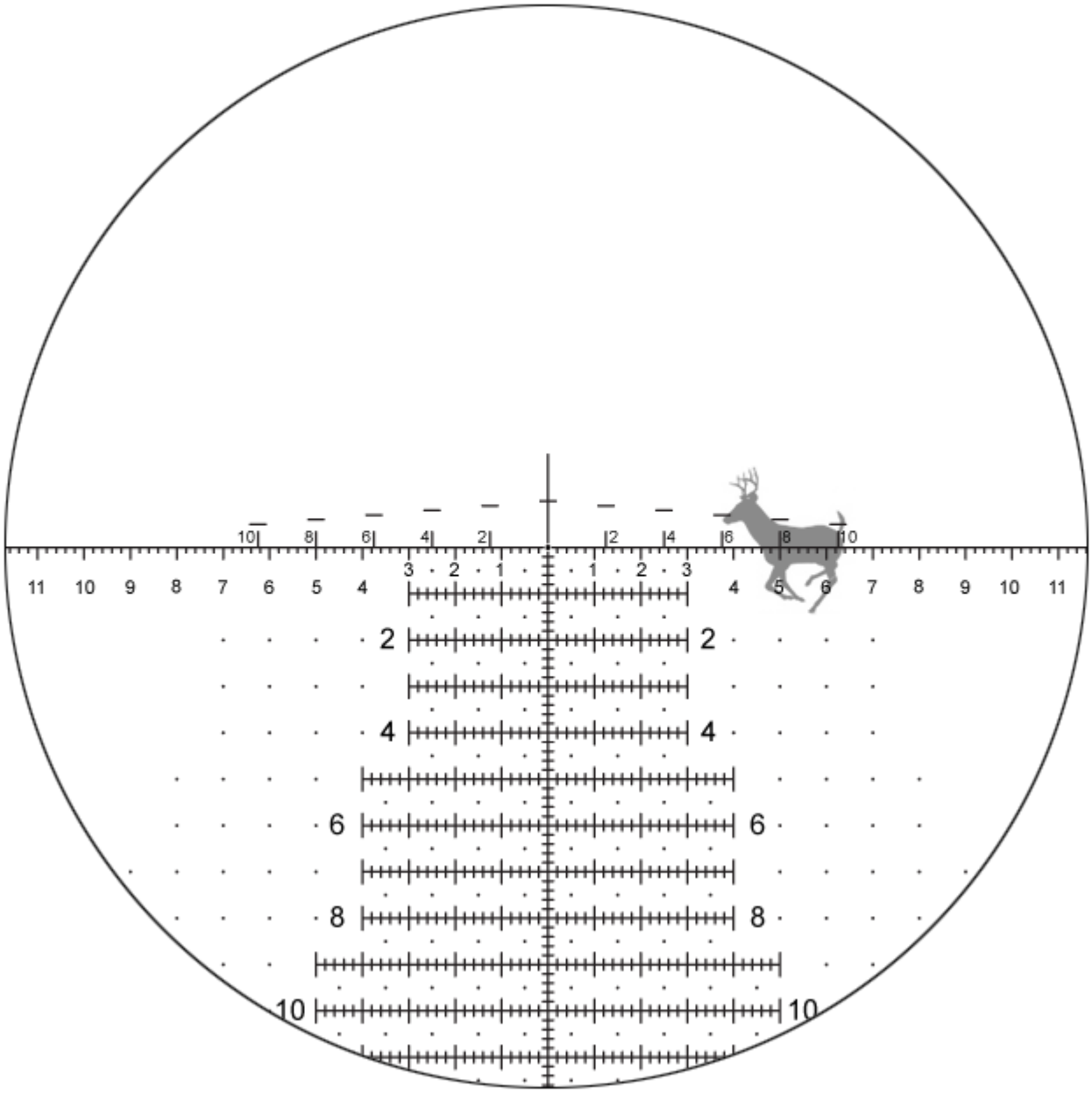


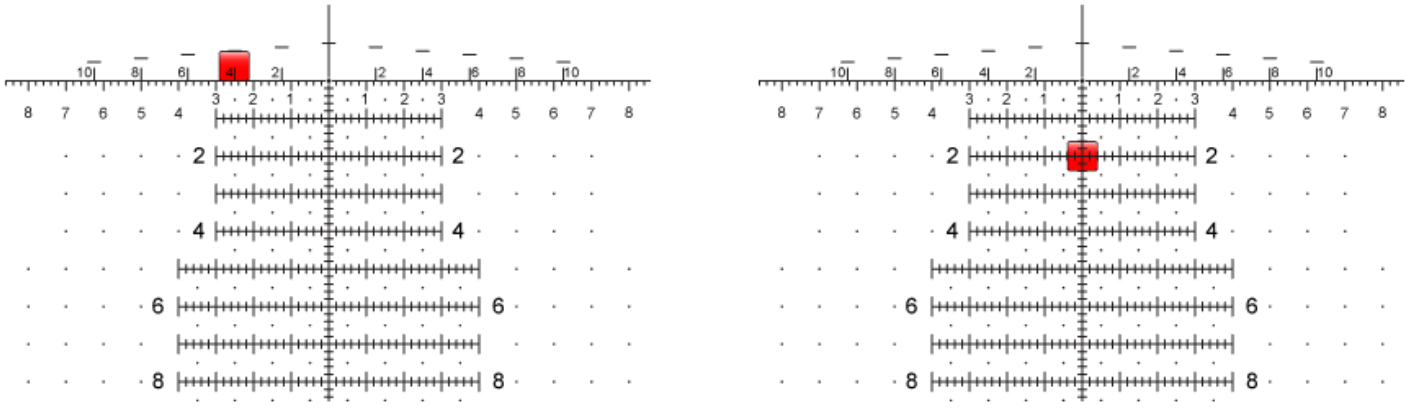

***Figure 5:*** *The Accuracy 1st Speed Shooting Formula allows use of the numbers along the horizontal stadia to rapidly acquire moving targets. This example shows a hold for a target running at approximately 8 mph, from right to left.*

## SPEED-SHOOTING ELEVATION HOLDS

The H59's moving target lead lines incorporate the Accuracy 1st Speed Shooting Formula to help you rapidly determine an elevation hold for your target without using the traditional mil relation formula for range-finding. The steps for determining an expedient hold are as follows:

1. Locate a 12" portion of the target such as the area from the top of a threat target's shoulder to the top of the head. Any 12" object near the target will work.
2. Find the line above the horizontal stadia that best brackets the 12" target between the moving target lead line and the horizontal stadia, as shown in ***Figure 6 left***.
3. Note the number corresponding to the lead line in step 2; divide that line value in half. For example, if the head to shoulders area fits between the 4 mph lead line and the horizontal stadia line, divide that in half to get a value of 2.
4. Place the 2 mil elevation hold (usually expressed as "2 mils high" or "+2 mils") on target, as shown in ***Figure 6 right***, and fire.

This process works well for many cartridges and weapon systems, but not all will impact exactly the same. However this system should place you close enough to make a solid hit, all else being equal. If shooting with a different caliber or muzzle velocity, you may need to add to or subtract from the original elevation hold to adapt the formula for your needs.



***Figures 6:*** *(LEFT)The reticle image at left depicts a 12-inch target bracketed between the main horizontal stadia and the line above the "4" moving target hold. (RIGHT) At right, after dividing the "4" in half, an elevation hold of "2" is used to engage the target's center mass.*

The HDMR's H59 reticle allows the traditional methods of determining range and holdover for elevation based on the mil-relation formula, yielding great accuracy. However, the Speed Shooting Formula provides a faster method for technical shooting at moderate ranges (out to 600 yards/meters) with common weapon systems.

# TReMoR2 RETICLE

The HDMR can be purchased with either of two reticle choices: the H59 or TReMoR2. Both reticles offer advanced Speed-Shooting features not available in other Horus reticles, for rapid acquisition of targets out to 600 meters. Both reticles also feature the Standard Horus Grid, for dispatching targets from 0-1500 meters.

## Overview

The TReMoR2 reticle is all about faster shooting. Advanced speed-shooting markers for wind and elevation are strategically placed along drop lines, making adjustments even faster than the H59. And the TReMoR2 is a refined-mil reticle, providing precision mil markings down to 0.1 mils throughout the reticle. The Standard Horus Grid is also included for traditional mil-based shooting. Unobtrusive holdover crosses extend the Standard Horus Grid while allowing for a clear uncluttered view.

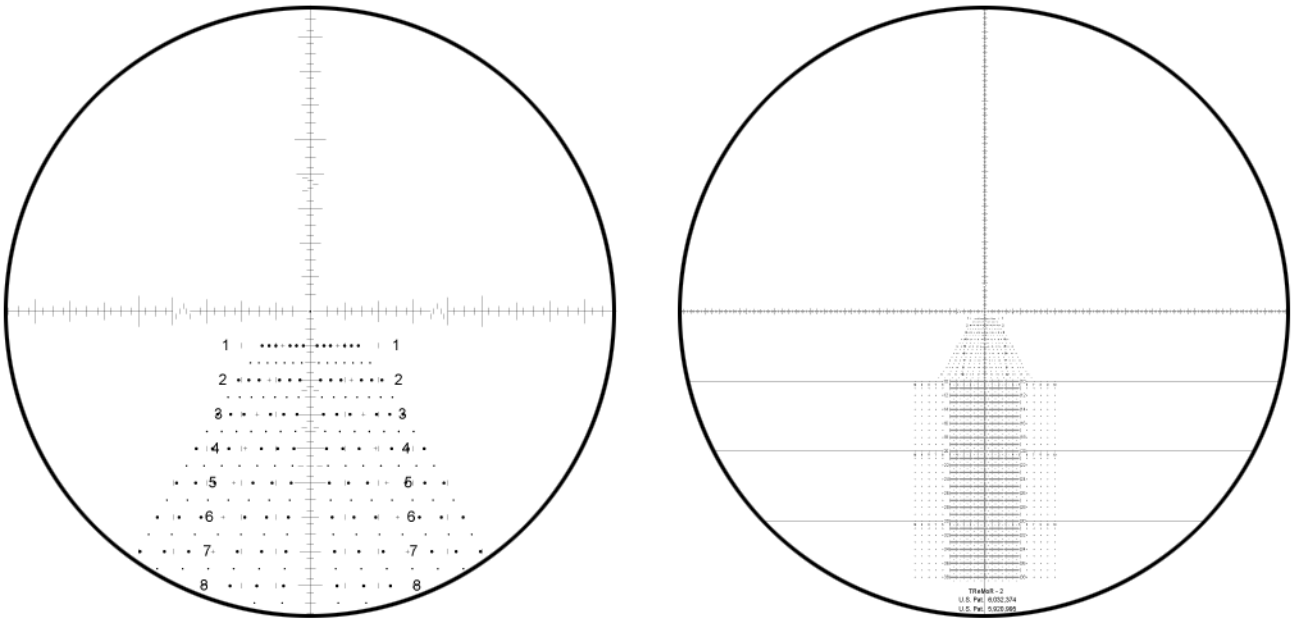



***Figure 7:*** *The TReMoR2 reticle shown at high magnification (LEFT) and low magnification (RIGHT).*

## SPEED SHOOTING WIND HOLDS

Drop lines 1 - 9 are primarily comprised of horizontally aligned wind markers, seven to the right and seven to the left of the reticle's main vertical stadia. Similar but smaller wind markers occur at the half-mil drop lines. While most of the wind markers are dots, note that on numbered mil lines the fourth marker from reticle center is a cross, providing a quick visual reference point. See ***Figure 8***.

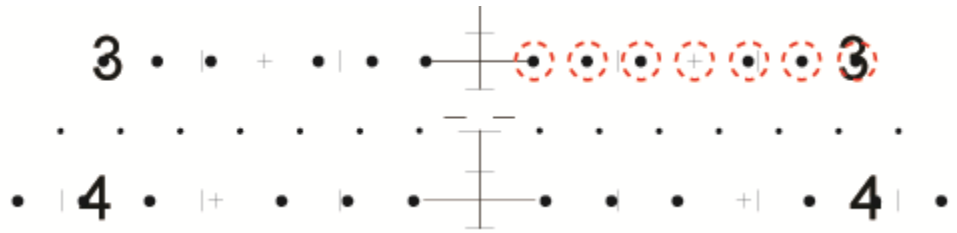
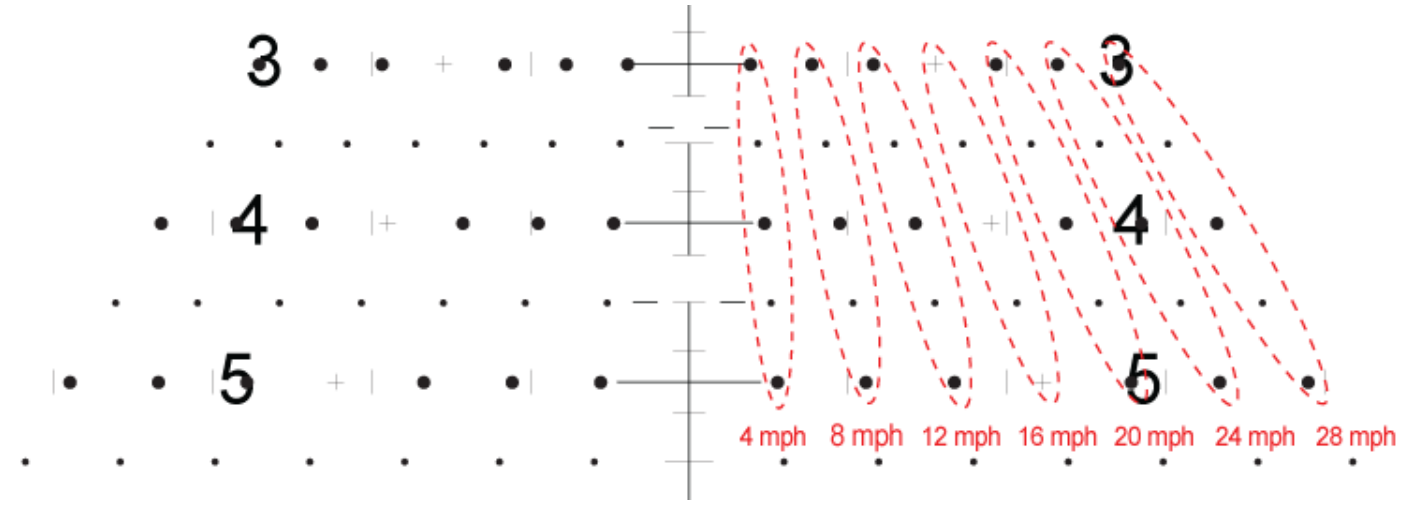



***Figure 8:*** *Seven wind markers occur on each side of the reticle along drop lines 1 – 9, circled in red above. Similar but smaller wind markers occur along half-mil drop lines, visible here at the 3.5-mil drop line. Crosses designate 4th markers, making counting faster and easier, shown here on the 3 and 4-mil drop lines.*

These wind markers represent wind holds. The speeds associated with the markers increase by a specific value from one marker to the next, moving outward from reticle center. The specific value between wind markers depends on the ballistic coefficient and muzzle velocity being used. Hence, different weapon systems have different wind marker values. For example, a XM2010/M110 has a wind value of 4, resulting in the following speeds from center outward: 4 mph, 8 mph, 12 mph, 16 mph, 20 mph, 24 mph, ending at 28 mph. See ***Figure 9***.




***Figures 9:*** *At left we see a wind value of 4 based on a XM2010/M110 weapon system, resulting in wind marker values of 4, 8, 12, 16, 20, 24 and 28 mph.*

It's crucial to recognize that the wind speeds are the same for each drop line. For example, as ***Figure 9*** shows, the third wind marker speed equals 12mph for a XM2010/M110 weapon system regardless of which drop line it occurs on. This means that no further calculations are required to place wind holds for different drop adjustments. Once you've calculated your seven wind marker speeds, you can place wind holds instantly on drop lines 1 - 9.

## Determine Wind Marker Speeds

Use any of the following methods to determine the wind value specific to your weapon system:

*1) Kestrel with Horus*
The Kestrel with Horus handheld unit combines ballistics software with advanced weather tracking. Look under the Accuracy 1st option under target, then find the wind dot value. Visit http://www.horusvision.com for Kestrel with Horus product information.

*2) ATragMX v3.85*
ATrag software puts you on target with sophisticated ballistics data based on your weapon, target and environment. ATragMX version 3.85 contains a TReMoR Wind Dot Calculator. For more info, visit http://www.horusvision.com/manuals.php.

*3) Ballistic Solver*
Alternately, you can use a ballistic solver to determine wind value. For example, first find the mil hold for a 20 mph wind for a target on an even-numbered drop line. Look on the range card for an even number for elevation, then determine the wind hold for a target of that distance. Say you find that on the 4 mil line, a 20 mph wind would require a 2.5 mil wind hold. Next, draw a line from the main horizontal stadia's 2.5-mil marker downward to intersect with the 4 mil drop line. Note the number of wind markers between the intersection point and the reticle's main vertical stadia, in this case 5. Finally, divide the wind speed – in this case 20 mph -- by the number of wind markers you noted. The result, 4 in this case, is your weapon's wind value (20 mph / 5 wind markers = 4 wind value.) See ***Figure 10***.

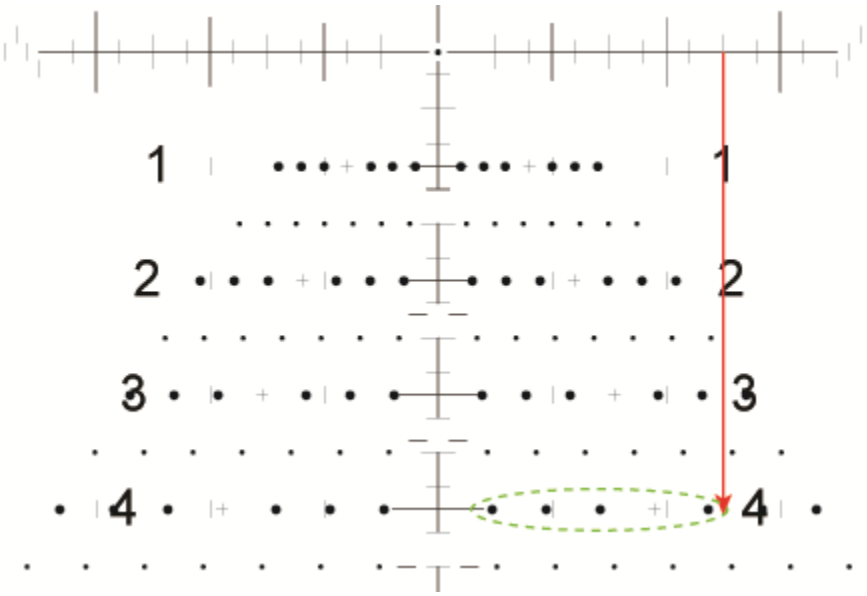



***Figure 10:*** *The Ballistic Solver method for determining wind marker values is illustrated for a 20 mph wind with a 2.5 mil wind hold and 4 mil drop hold. To determine TReMoR2 wind values, we divide the wind speed (20 mph) by the number of TReMoR2 wind markers (5, circled in green) which occur on the 4-mil drop line before the 2.5-mil wind hold: 20 / 5 = 4. Hence, 4 is the TReMoR2 wind value.*

Once you've determined your wind value, you can quickly calculate all seven wind marker speeds. The first wind marker's speed is equal to your weapon's wind value. To determine the next wind marker speed, simply add your weapon's wind value to the preceding marker's speed. For example, a weapon value of 4 determines the first marker's speed as 4 mph. For the second marker's speed, add 4 to 4 mph, for a value of 8 mph. For the third maker's speed, add 4 to 8 mph for a

value of 12 mph.  Applying this simple process to all seven wind markers would produce the following speeds from reticle center outward: 4 mph, 8 mph, 12 mph, 16 mph, 20 mph, 24 mph and 28 mph. See ***Figure 9***.

## Place Wind Hold

Once you've determined the TReMoR2 wind values for your weapon system, you can make wind adjustments in seconds regardless of distance. To adjust for wind, locate the drop hold line best suited to your target. Next, on that appropriate drop line, locate the wind marker which best matches your wind speed, and place it over the target. For winds moving from the right, use wind markers to the right of reticle center; for winds moving from the left, use wind markers to the left of reticle center. For example, ***Figure 11*** illustrates the hold position for a 16 mph wind moving from the right, XM2010/M110 weapon system, and 4.5 mil elevation adjustment.

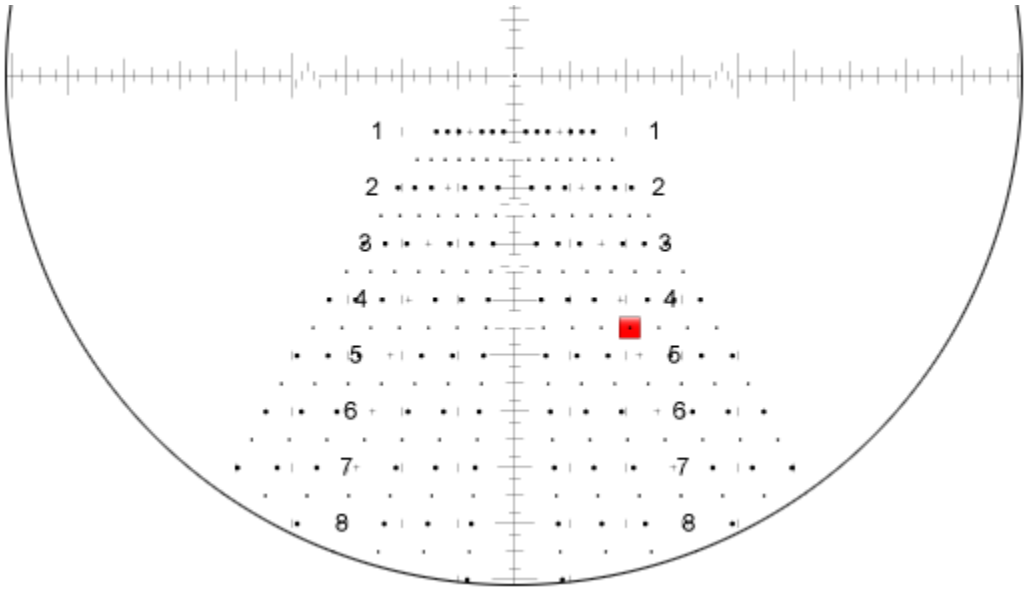



***Figure 11:*** *Shown here is a wind hold at the 4th marker on the 4.5-mil drop line, based on a 16 mph wind from the right, a XM2010/M110 weapon system and resulting TReMoR2 wind value of 4.*

## Traditional Method for Placing Wind Holds

A mil grid is built into the TReMoR2 so shooters can hold off in mils rather than using Speed-Shooting Wind Markers for holds. Small hashes forming a 1-mil grid are discretely placed along drop lines 1-9 for this purpose. See ***Figure 12***. This mil grid is continuous with the Standard Horus Grid, which occurs below the TReMoR2's10-mil drop line.

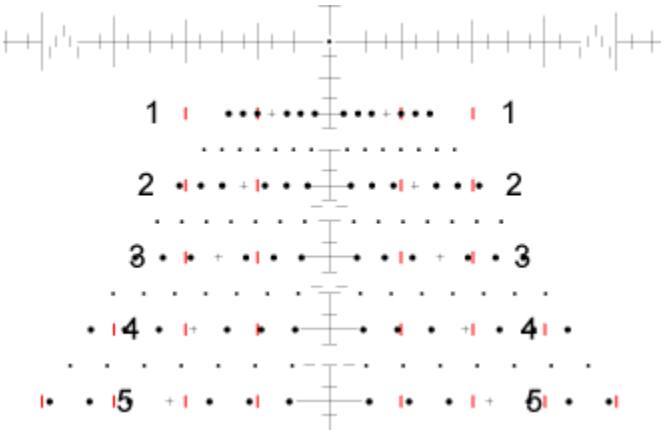



***Figure 12:*** *Highlighted here in red, a subtle mil grid occurs from drop lines 1 – 9.*

## SPEED-SHOOTING ELEVATION HOLDS

The TReMoR2's main stadia incorporate the Accuracy 1st Speed Shooting Formula to help you rapidly determine an elevation hold for your target without using the traditional mil relation formula for range finding. This method works very well for targets out to 600 meters.

As show in ***Figure 13***, Speed Shooting Drop Markers occur along the reticle's main vertical stadia down to the 5-mil drop line. You'll notice that marker heights decrease by 0.1 mils from one drop line down to the next.

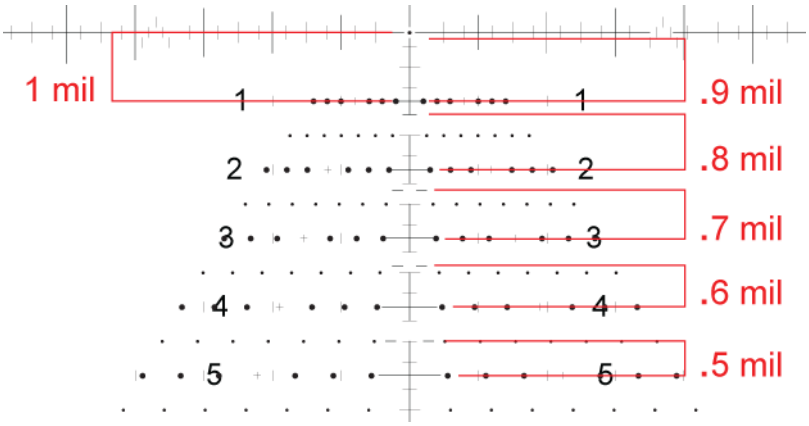



***Figure 13:*** *Speed Shooting Drop Markers are embedded directly into the TReMoR2's main vertical stadia from drop lines 1 - 5, providing a visual system for rapid drop adjustments for targets out to 600 meters. As shown in red, marker heights decrease by 0.1 mils from one Speed Shooting Drop Marker down to the next.*

The steps for determining an expedient hold are as follows:

1. Locate a 12" portion of the target such as the area from the top of a threat target's shoulder to the top of the head. Any 12" object near the target will work.
2. Find the Speed Shooting Drop Marker that best brackets the 12" target as shown in ***Figure 14 left***.
3. Adjust slightly downward, vertically centering the target behind the drop hold line associated with the selected Speed Shooting Drop Marker, as shown in ***Figure 14 right***, and fire.

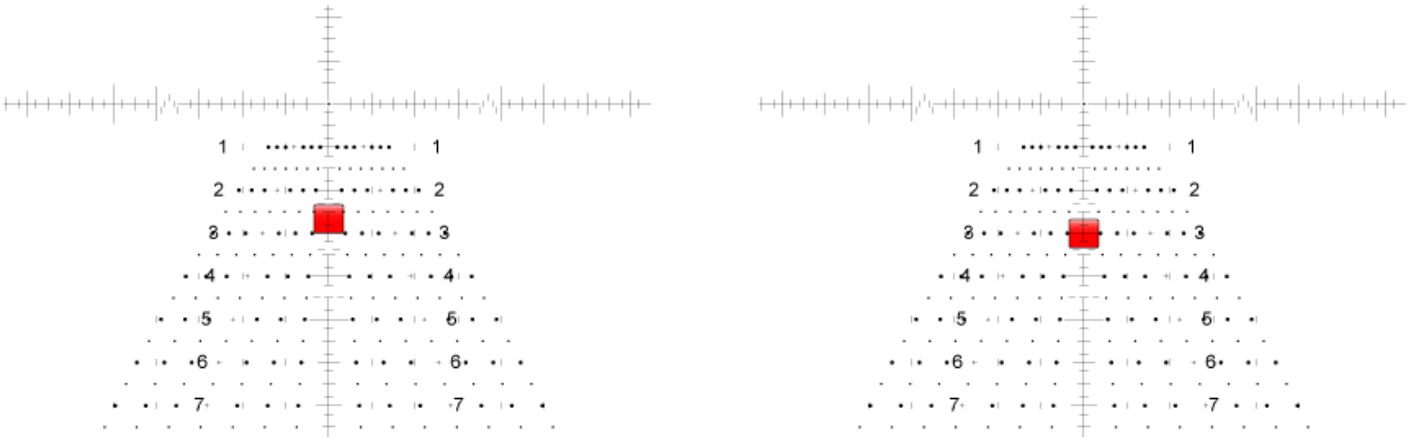


***Figure 14:*** *(LEFT) The reticle image at left depicts a 12-inch target best bracketed by the Speed Shooting Drop Marker on the 3-mil drop line. (RIGHT) At right, the target is then vertically centered directly behind the 3-mil drop line.*

The TReMoR2's Speed Shooting Drop Markers are optimized for .308 caliber, but may be used with many other calibers. This process works well for many cartridges and weapon systems, but not all will impact exactly the same. However this system should place you close enough to make a solid hit, all else being equal. If shooting with a different caliber or muzzle velocity, you may need to add to or subtract from the original elevation hold to adapt the formula for your needs.

The HDMR's TReMoR2 reticle allows the traditional methods of determining range and holdover for elevation based on the mil-relation formula, yielding great accuracy. However, the Speed Shooting Formula provides a faster method for technical shooting at moderate ranges (out to 600 yards/meters) with common weapon systems.

# ADDITIONAL INFORMATION

Horus Vision scopes and reticles make the complex process of precision shooting faster and easier. From the point where you identify a target, to the point where you follow-through to confirm the hit, there are several critical steps where Horus technology makes a difference:

1. Ranging
2. Use of grid for holdover
3. Wind holds and/or moving target lead lines
4. Follow-through and Second Shot Correction™

You can explore these steps in greater detail in the *Horus Vision Tactical Manual*. Please refer to it for proper application of these steps.

**Increase Accuracy with ATragMX™ Ballistics Software**
For even greater accuracy, Horus ATragMX Ballistics Software can be used in combination with your Horus scope and reticle. Our ballistics software lets you take combat-proven aiming solutions into the field so you are instantly ready for any shooting conditions. ATragMX enhances any mil-based reticle system, but it is not required. To learn more about the benefits of Horus Ballistics Software, see the ATrag User Manual.

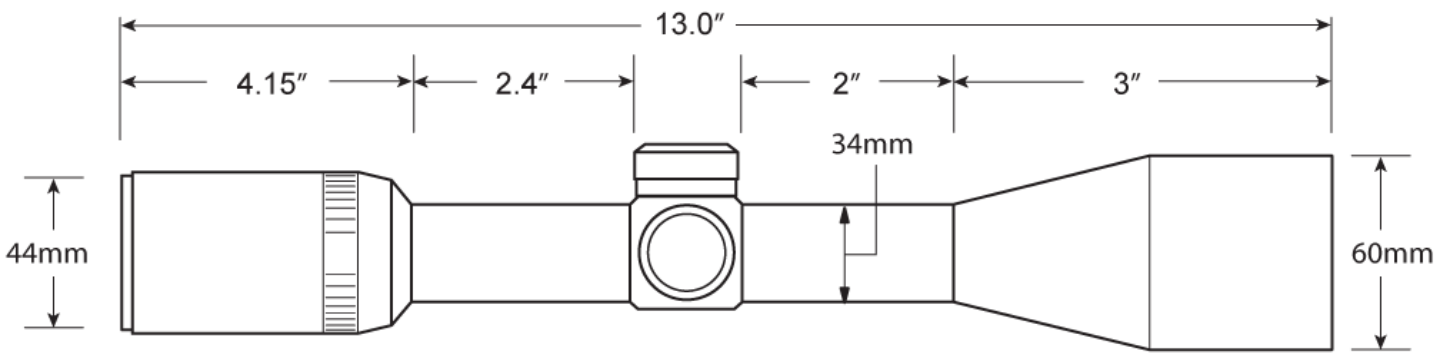



***Figure 15**: HDMR scope technical drawing with specs.*

## HDMR SCOPE SPECIFICATIONS

**Specifications:**

| | |
|---|---|
| Power | 3.5-21x |
| Length | 13" (33 cm) |
| Weight | 35.2 oz. (998g) |
| Tube Diameter | 34mm |
| Wall Thickness | 1.5mm |
| Material | aluminum |
| Tube | 1 piece |
| Color | black |
| Exterior Finish | matte anodized |
| Shockproof | 1200 g |
| Water-resistant | yes |
| Dustproof | yes |
| Fogproof | yes |
| Warranty | limited lifetime |
| Reticle | H59, TReMoR2 |
| Reticles | 1st Focal Plane |
| Reticle Illumination | no |
| Lenses | 16 |
| Lens Coating | RainGuard Coating (outside surfaces) |

| | |
|---|---|
| Twilight Factor | 20.0 @ 8x - 36.1 @ 26x |
| Objective Lens | 50mm |
| Field of View | 26 - 5 ft (at 100yds) |
| Eye Relief | 3.9" (100mm) minimum |
| Exit Pupil | 10.3 - 2.3 mm |
| Ocular Type | rapid European focus |
| Diopter Adjustment | -3 to +3 |
| Elevation adjustment | 26 mils (102 MOA) |
| Elevation Increment | 1 click = .10 mil radian |
| Elevation Adj. Range | 13 mils (45 MOA) |
| Windage adjustment | 24 mils (95 MOA) |
| Windage Increments | 1 click = .10 mil radian |
| Windage Adj. Range | 13 mils (45 MOA) |
| Turret Caps | no |
| Turret Type | large tactical turret with lock |
| Parallax | side parallax 50 yards to infinity |
| Sunshade | 4” length, included |
| Knobs | 0.1 mil (1 cm at 100 meters) per click |

## H59 RETICLE

**Features:**

- Reticle hold points subtending to 0.2 mil for ease of use at 21x
- 42 mils (144 MOA) total elevation available at 3.5x; 8 mils (27 MOA) at 21x
- Precise calibration of measurements to within less than 0.5%

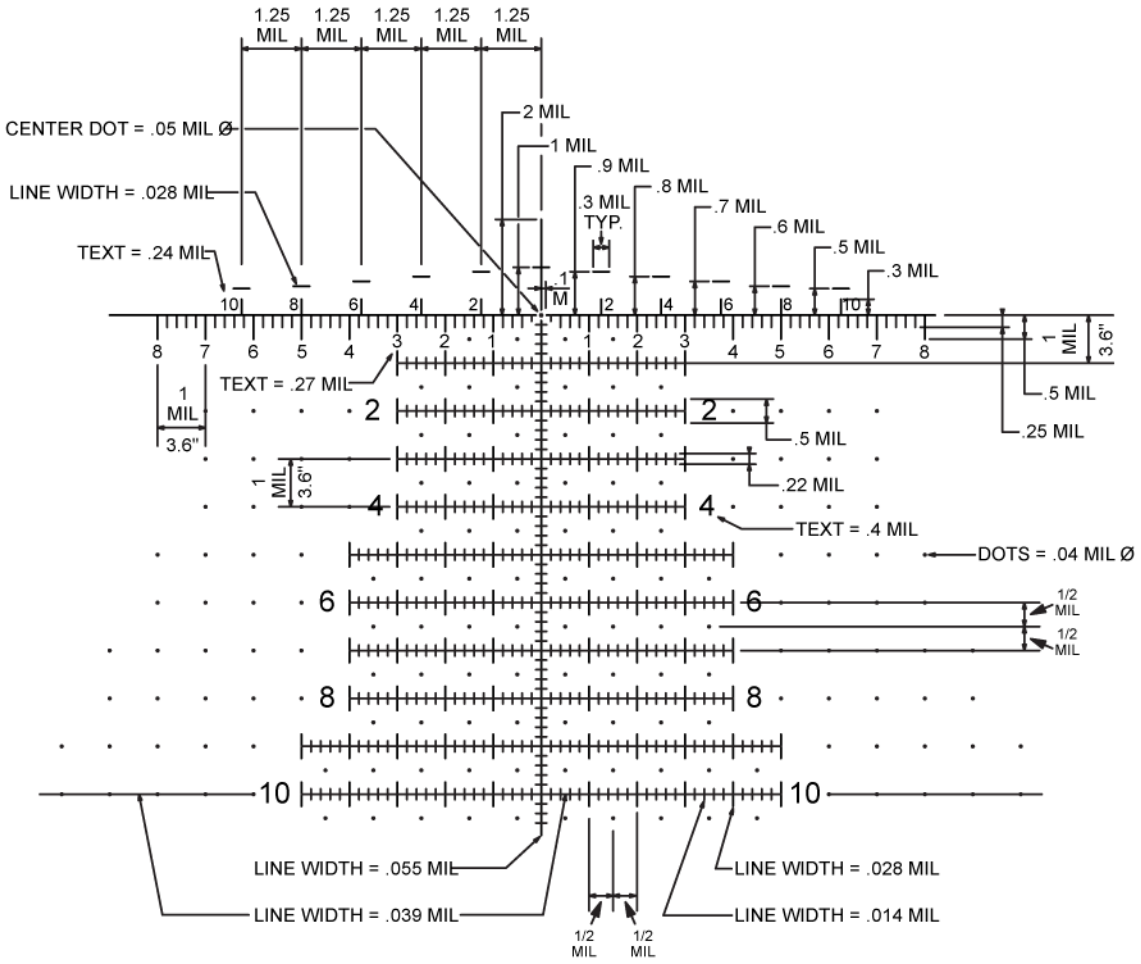



***Figure 16**: H59 reticle technical drawing with specs.*

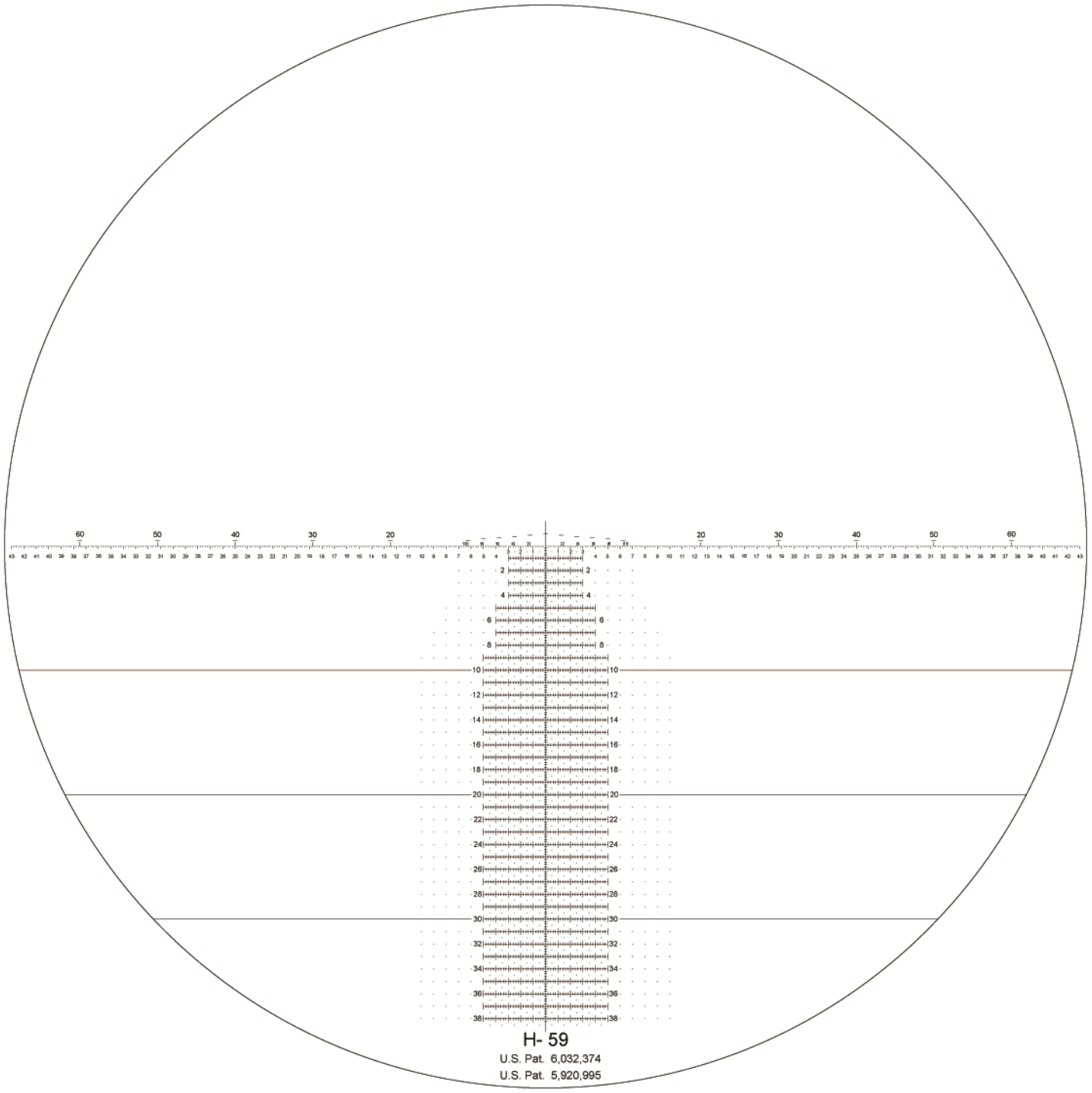



***Figure 17***: *Full view of the H59 reticle.*

## TReMoR2 RETICLE

- 38 mils (131 MOA) total elevation available at 3.5x; 8 mils (27 MOA) at 21x
- Precise calibration of measurements to within less than 0.5%

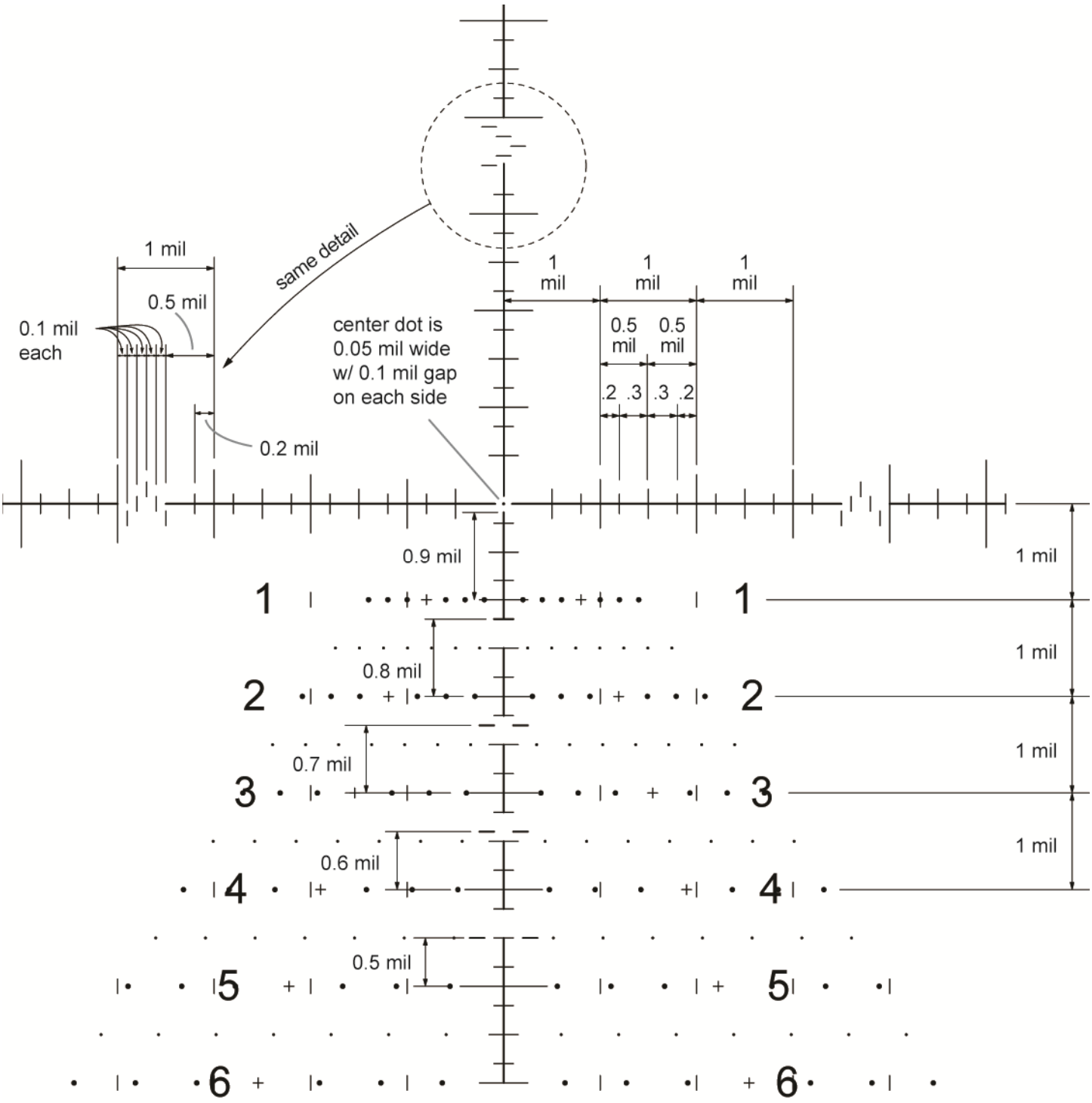



***Figure 18:*** *The TReMoR2 reticle with specs.*

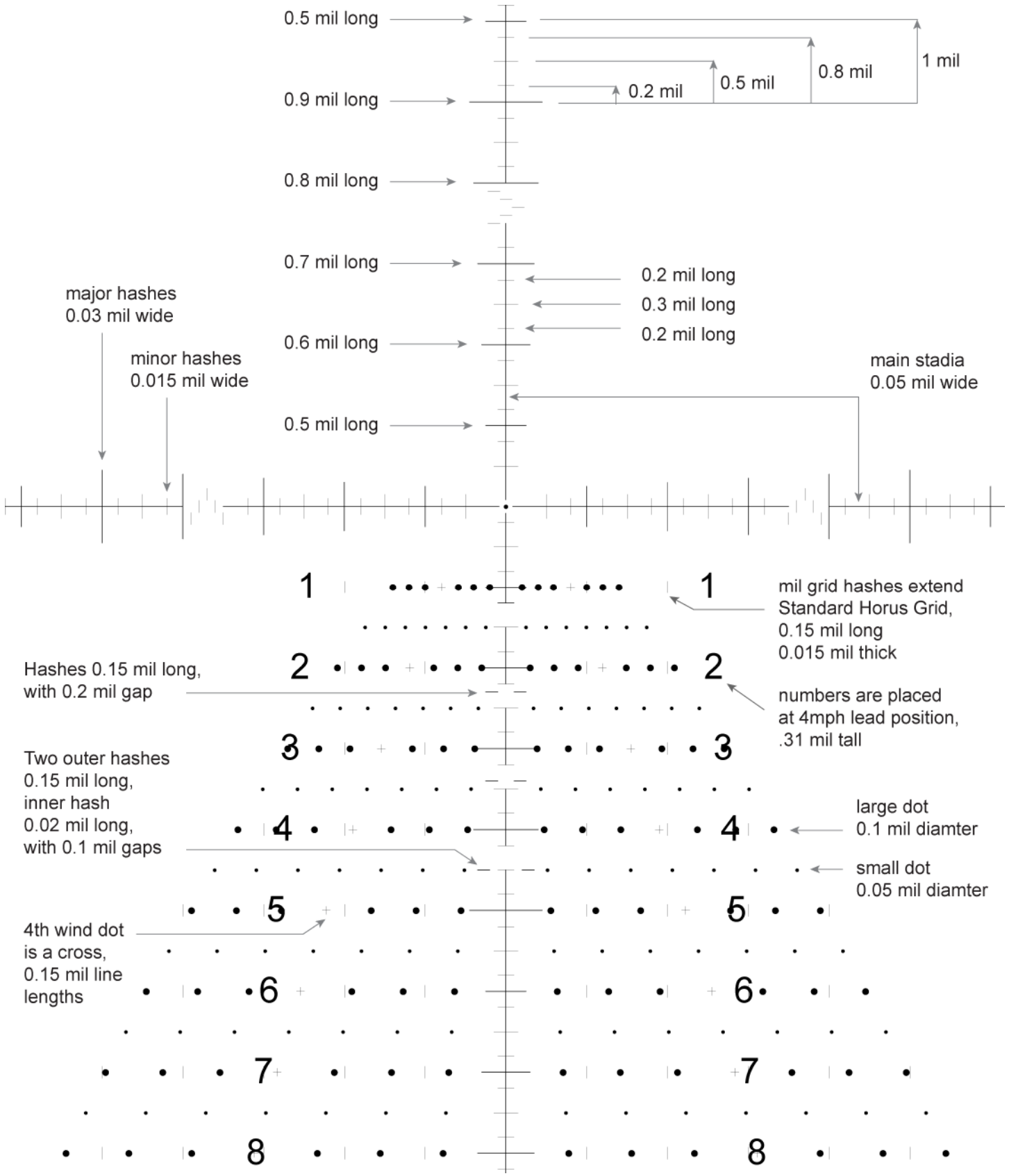



***Figure 19:*** *The TReMoR2 reticle with specs.*

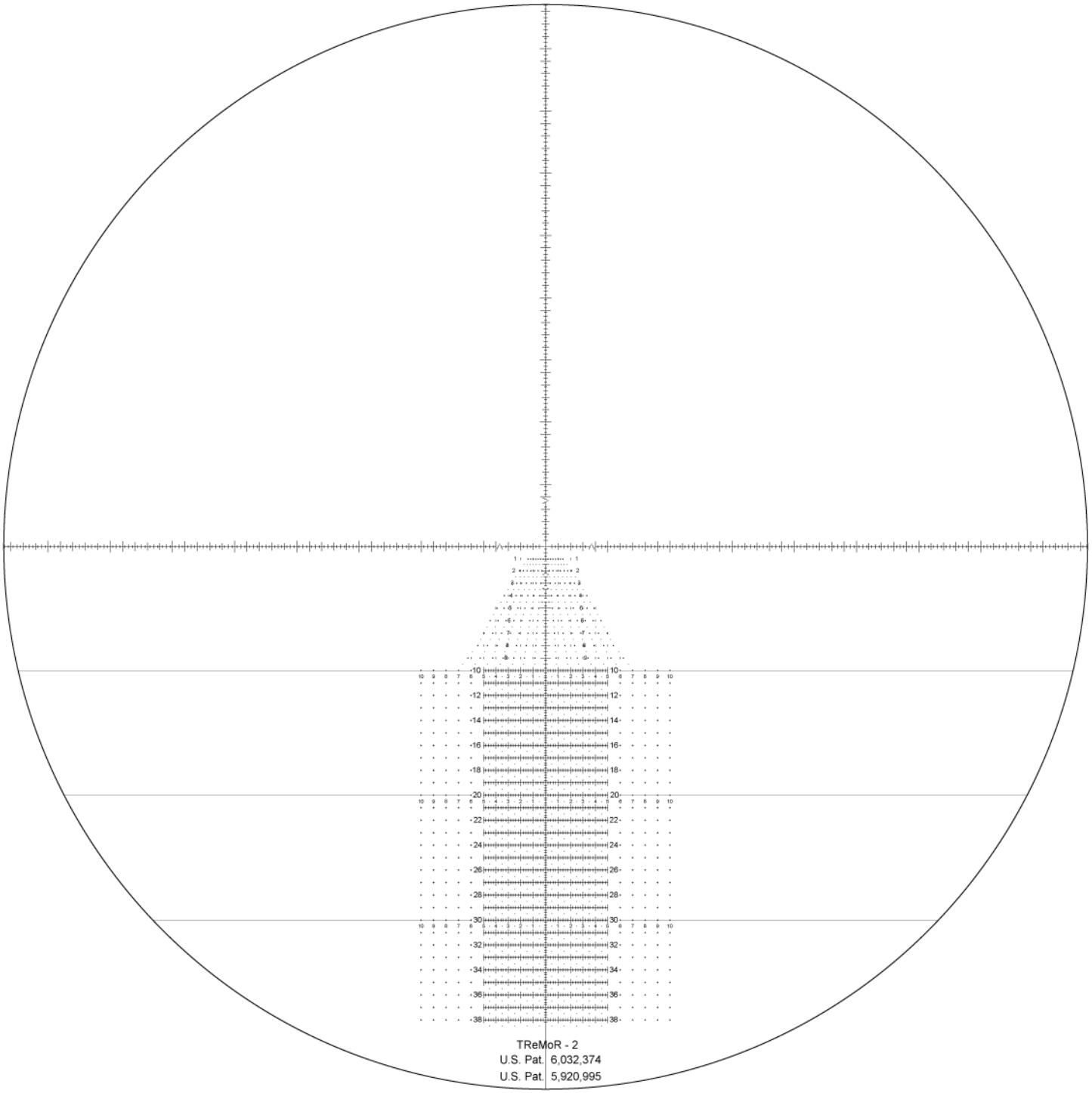



***Figure 20***: *Full view of the TRemor2 reticle.*

# GENERAL CARE

Your Horus scope requires very little maintenance. The following simple steps will ensure maximum optical performance:

- Wipe clean all exposed optical surfaces occasionally with the lens cloth provided.
- Maintain metal surfaces by removing any dirt, dust or sand with a soft brush to avoid scratching the finish; then wipe down with a damp cloth, followed by a dry cloth.
- For best luster and corrosion resistance, finish by wiping metal surfaces with a silicone cloth.
- Protect your scope with lens caps when not in use.


***Figure 21**: The HDMR with lens caps in place.*

# WARRANTY

## HDMR LIMITED LIFETIME WARRANTY

The HDMR scope is covered by Bushnell's Limited Lifetime Warranty. For more information, visit the warranty section on Bushnell's website: http://bushnell.com/global/customer-service/warranty-information. To initiate repairs or replacements covered by warranty, contact Bushnell's Customer Service department: http://bushnell.com/global/customer-service.

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