

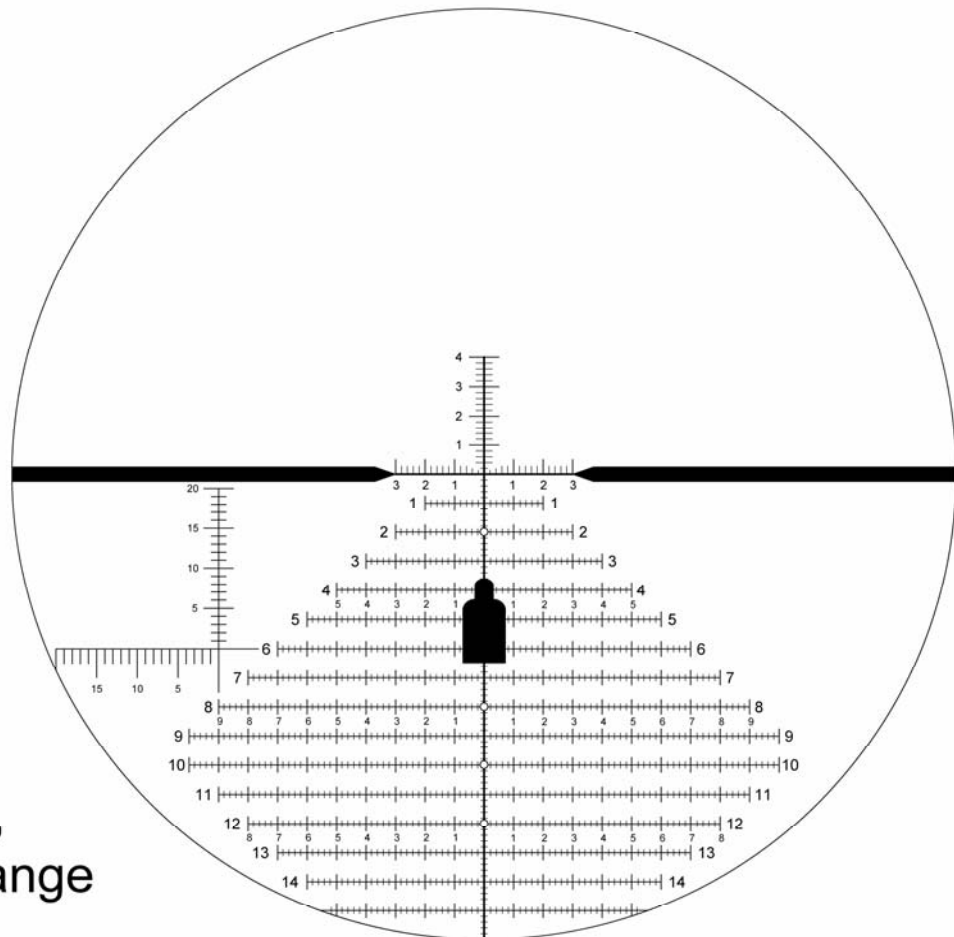
The HorusTM System

A Force Multiplier on the Battlefield
for Military & Police use

Model 1000 Series

A Sighting System for
the 21st Century

for Fast,
Accurate
Shooting,
at any Range



Horus Vision, LLC.

Dennis J. Sammut

January 15, 2006

Restricted Distribution for
Military & Police only



MISSION STATEMENT

**HORUS VISION IS DEDICATED TO PROVIDING THE RIFLEMAN
THE TOOLS TO YIELD THE HIGHEST PROBABILITY OF A FIRST
ROUND HIT AT EXTENDED RANGES.**

**12TH Edition
January 15, 2006**

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Disclaimer

Please be careful when using firearms. A mistake in judgment, a lapse of attention, a malfunction of any kind can result in serious injury or death. Bad things sometimes happen to good people.

The information in this manual, while believed to be reasonably accurate as of 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 the information with respect to your own firearms before use.

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HORUS VISION RETICLE

The firearm innovation and development has far out-stripped optical aiming technology. It is sad but true that our most advanced rifles use the 40 year old MIL-DOT shooting method. Yes, those “Dots” might be enclosed in a fancy new scope with improved optics; but, you still have a 40 year old MIL-DOT system enclosed.

Those “DOT’S” represent an archaic system that is difficult to master and limits the ability of the operator to dispatch targets with confidence at extended ranges.

Horus Vision is a bold jump into the 21st century - We are not just a riflescope; we are a complete aiming system comprised of superior optics, patented reticle, and patented software.

The Horus Reticle is an optically precise reticle which has a uniform grid etched on glass. The optically ergonomic design and layout of the reticle that includes a built-in range finder reduces eye fatigue yet provides the rifleman a clear picture and numeric information about the target.

The main horizontal elevation windage lines located on the Horus targeting grid are numbered. The numbers represent the elevation values in U.S.M.C. Mils, where 6283 Mils = 1 circle. However, the numeric measurement value of the individual lines is unimportant. The sole purpose of the numbers is to allow the rifleman to rapidly find and hold on the desired elevation line.

Since knowing the distance to the target is critical, Horus Reticle features a range finder calibrated in USMC MILS. Ranging to 1/10 of a MIL can be achieved with confidence. This Rangefinder is located on the main crosshair.

For operators schooled in the American system of inches and yards, some of our military reticles feature a rangefinder calibrated in IOA (Inches of Angle). This rangefinder can be mastered in a matter of minutes. The IOA rangefinder is usually located in the left upper or lower quadrant on the main crosshair.

A detailed explanation of how to use the range finder is provided in this manual.

One of the great benefits of combining the Horus Reticle with high quality optics in the first (objective) plane is that yardage and range finder values stay exactly the same regardless of the setting of power magnification.

In other words, zero will not change, point of impact will not change, distance values will not change, range finder values will not change, windage values will not change, lead values will not change when you increase or decrease the power setting.

The reticle was specifically designed for shooting at unknown distances by providing accurate holdover points, and windage adjustments ... yet to be flexible enough to interface with computer ballistics programs which could also factor in real time environmental conditions.

This reticle is different. To appreciate the Horus Reticle's full potential, you must use the scope on a rifle and view targets at extended ranges.

Simply, you need a revolutionary design if you want to break the so-called 5 to 600 yard barrier. The tactical rifleman demands performance, not empty claims. The Horus Reticle allows the tactical rifleman to use the full potential of their custom rifle and ammo.

When superior optics and the Horus Reticle are combined, a lethal long-range compliment is added to your rifle. Since no windage and elevation knob adjustments are required, you can be totally concentrated and focused on your target. When time is critical, you will find the Horus Reticle can put your bullets on target at mixed ranges in a single shoot involving multiple targets from point blank to 2,000 yards and beyond faster and quicker than any other reticle.

Except for the initial zeroing, the Horus Vision eliminates the need to adjust elevation and windage knobs, saving time and trouble and eliminating malfunctions due to wear and tear from constant usage. With the Horus Vision Reticle the rifleman can accurately switch from long range to mid range to close range shooting without adjusting any knobs. Dialing "come-ups" is completely eliminated. If the rifleman wants the extra edge in accuracy, he can calculate firing solutions in the field by using a hand held "PALM" loaded with TRAGMP Aiming Point Software. The rifleman can input real time environmental data and calculate a real time firing solution. A rifleman can be trained faster and quicker and also have a higher number of first round hits than if trained with the conventional MIL DOT system that also lacks the second shot correction feature of the Horus Reticle.

The Horus Vision sighting system has been field tested in extremes, ranging from the heat and dust of the Australian Outback to the cold and ice of Alaska's interior.

The Horus System is a bold jump into the 21st century.

A RIFLEMAN'S HISTORICAL PERSPECTIVE

Remove the Abstracts and deal with the facts

I have been shooting the mil-dot reticle since the mid-seventies. It was developed as a means to measure distance to target. However, it did take considerable time to learn how to use it. But once educated, estimating range was relatively easy. In addition, the term “hold over” took on a whole new meaning. Now, we could zero our rifles for three to six hundred yards and hold over or under for the acquired targets. Was the methodology perfect? No. Is it subject to failure? Yes.

The methodology was not perfect because the use of the mil-dots was not perfect. Range estimation was just that, estimation. So when the rifleman adjusted his/her come-ups for the shot, or “Held over”, he/she was guessing. The equation was guesswork. In order for the precision shooter to excel in his/her art, they had to truly be “Professionals”. And becoming a professional took a considerable amount of time, skill and training.

There are numerous accounts of riflemen taking precision shots where they missed their target and hit low. This is a large problem, and in a Military environment can be your last. The reason for the miss is due to the fact that while twisting the elevation turret for the right dope, the reticle failed to index properly and “Stuck” inside of the scope tube. This actually happens quite frequently and if you have ever been through a precision shooting class, you will remember how you were instructed to rotate the elevation turret two minutes of angle past your intended minute of angle come-up and then come back down and wrap on top of the elevation and windage turret to get the reticle to settle in. This is not make believe, this has been and currently is a real problem with some of the most popular scopes in use today.

“Dennis Sammut” of Horus Visioin, LLC, has invented a smart mil-radian reticle that solves the inherent problems of the old “Mil-dot” reticle. It takes about an afternoon to learn, will have you up to speed within an hour and is deadly accurate.

Spool up time to learn the system is actually less than an hour. The “System” consists of a Horus Vision riflescope, a Palm PDA with the ATRAGMP Targeting Software and an Angle Slope Level Indicator (ASLI).

How to use the Horus Vision System

The first step in using the “System” is to mount a Horus Vision riflescope in your rifle and zero it for a distance of one hundred yards.

The next steps that are an essential part of the Horus Vision System will be to utilize the Palm PDA with the ATRAGMP targeting software. These steps consist of gathering a little bit of data, consisting of weather data and target information. This means that you will have to know the ballistic coefficient of the bullet you are utilizing, as well as its velocity. Once that is established, you will need to know your current, “Real Time” weather data. The weather data consists of the outside ambient air temperature, barometric pressure and humidity. And finally, your distance to target, wind speed, wind direction, and the angle up or down that you are holding on.

At this time, you input data into the ATRAGMP software that is installed in your Palm PDA. When you are finished, the software will display a “Hold” point. For example, let’s say that you have a target sitting at 600 yards. You input your data. When done, you will see located in the bottom left hand corner of the display a number that directly correlates to the Horus Vision reticle. That number may say, hold on line 3.6, (3.6 mil-radians). Instead of clicking your turrets to the appropriate minute of angle and then wrapping on-top of the turrets to get the reticle to settle in, you will just hold on line 3.6, aim and pull your trigger. It is that simple and that fast! And in addition, you did not spend a year shooting your rifle in all conditions, in all climates and at all elevations nor have you changed out your barrel and have been forced to work up your data all over again ... You have eliminated months of training. If you are in the field, take your readings in the morning and afternoon, fill in your holds on a separate data card, and put your Palm PDA away. This is the way several members of our military are doing it, and they are doing it with phenomenal success. They have chosen to eliminate the abstracts and deal with the facts. So should you.

Give Horus Vision system a shot. All it will take is one.

And remember, “Your clock is ticking when your turrets are clicking”.

HORUS VISION

TEST OF ECONOMICS

For those using the Mil Dot reticle concept for Sniper activity, the simple facts are that no matter which manufacturer's scope you choose that utilizes this technology, almost any scope will do so the decision comes down to one of simple economics. As with the acquisition of any military equipment, the following basic tests must be employed:

Is the item labor intensive?

Is the item training intensive?

Does the system have redundancy?

What is the total cost of the item, including the unit price plus all of the above considerations?

1. The Horus system is fast and easy to learn. To employ it successfully requires simple consistent shooting skills ... those perfected in basic training will do. Horus takes only one or two days to learn versus months of intensive training with the current mil dot reticle. You can train an entire platoon at less cost than it takes to train 2 snipers in the Mil Dot. This means that any rifleman in any platoon can be a back-up sniper (at least from the shooting skills point of view) giving the unit considerable redundancy. Therefore, any member of the unit can successfully engage any target at any range under any conditions.
2. The Horus system is totally interchangeable with any type of rifle that can be fitted with a riflescope. The system works with any rifle, in any caliber, in all conditions, at any altitude. Therefore, a Horus trained shooter can pick any rifle with the Horus system and be able to engage any target with it with no additional training.
3. By extending the distance to the target, Horus allows the shooter to make first shot hits at extended ranges with confidence and at greatly reduced risk to his person. When multiple targets are encountered at mixed ranges, Horus gives the shooter the tools to engage and dispatch each target with uncanny speed and accuracy. He can literally control the battlefield.

While we feel that the Horus optics are without peer in the industry, our system may be fitted to most other fine optics including U.S. Optics, Leupold, Stevens and Schmidt & Bender ... just to name a few. Horus is a target aiming system that is effective in any optic and will expand the capabilities of that optic and the user thereof. You have asked for a 21st century sighting system and Horus has delivered.

The current MIL DOT scopes with a simple crosshair and 16 DOTS provide the basic foundation for long range shooting.

THE HORUS RETICLE

TAKES LONG RANGE SHOOTING TO A HIGHER PERFORMANCE LEVEL, WHILE RETAINING THE PROVEN MILLIRADIAN SYSTEM.

The term MIL DOT is used only to identify this popular current reticle style being employed by the military or police. Although based on milliradians, the Horus Reticle takes the MIL Dot concept into the 21st century. It is fully compatible with all existing accessories such as the MIL- Dot master.

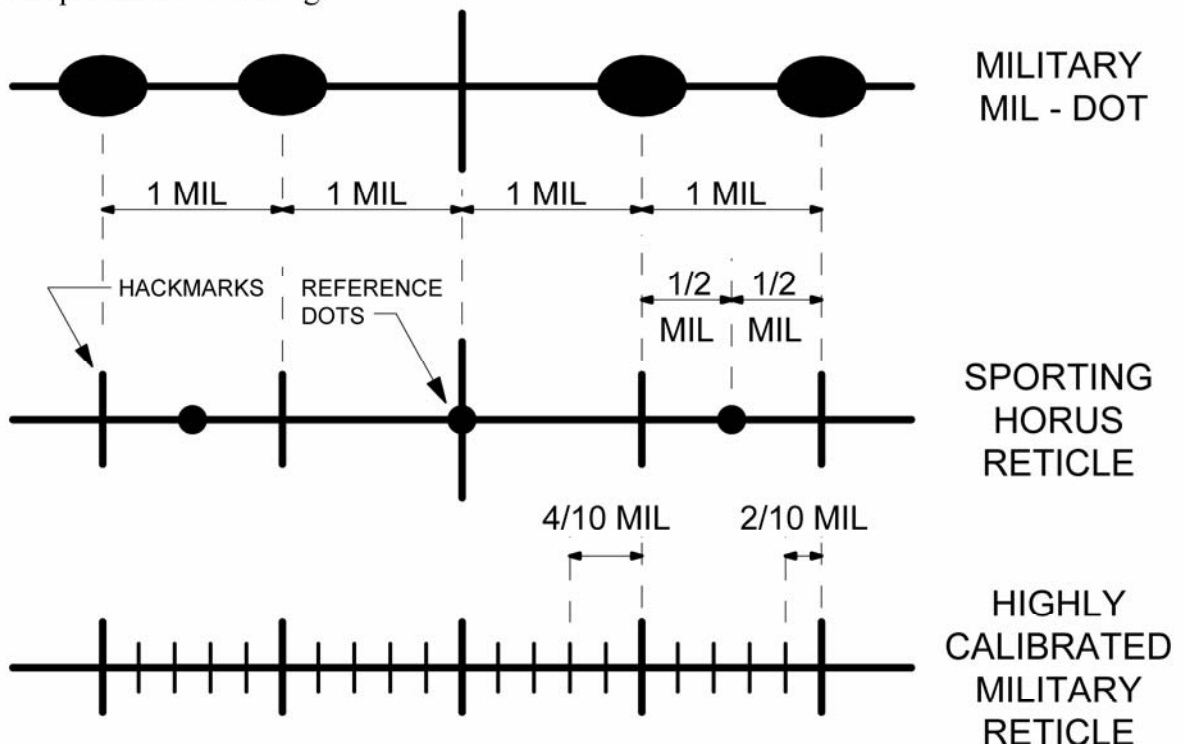
THE HORUS RETICLE HAS NO MIL DOTS

Confusing MIL DOTS have been replaced by easy to read calibrated Hackmarks and Reference Dots. The Horus Vision Reticle provides an easy transition from the old style MIL DOT reticles to the user friendly Horus Reticle.

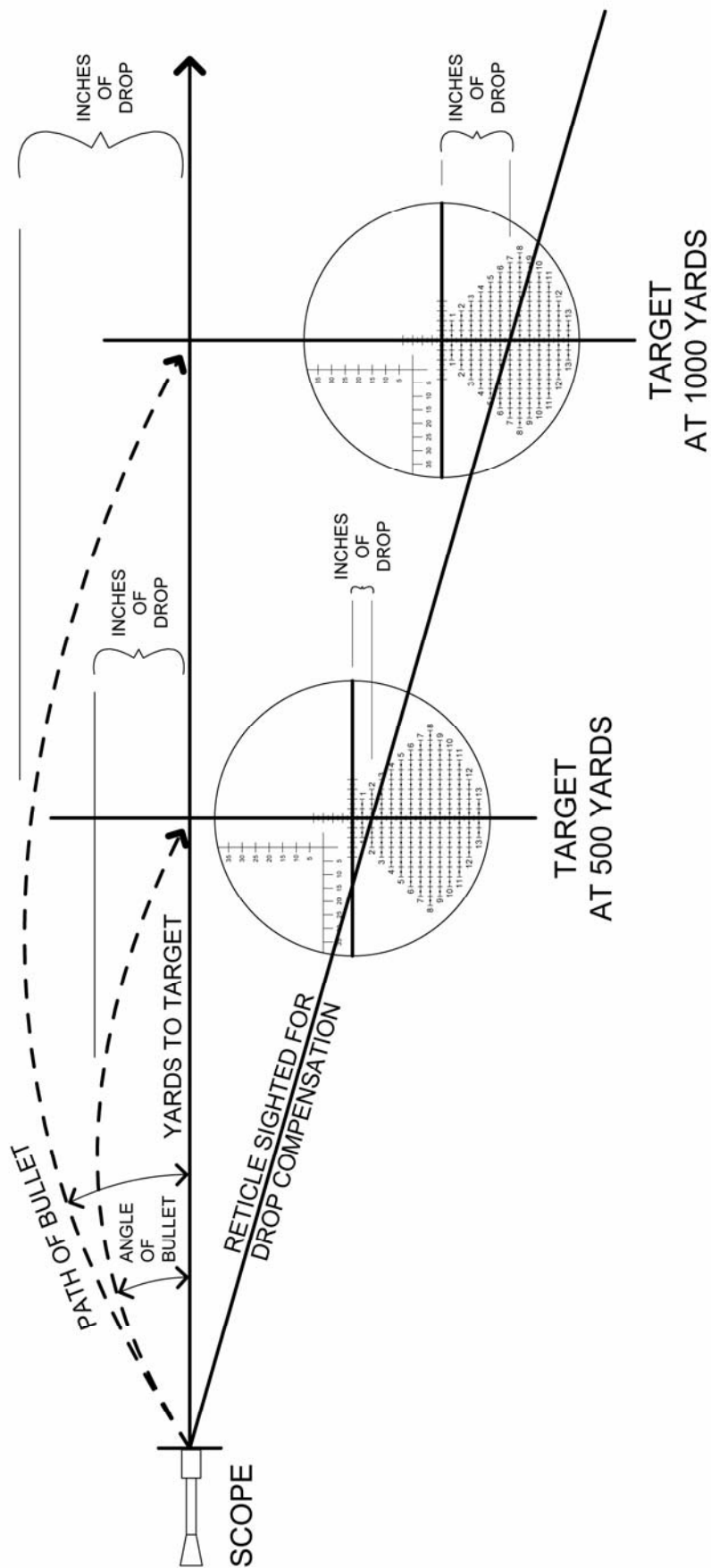
To insure accurate range measurements, a vertical and horizontal range finder calibrated in Mils is provided that can be read to to 1/10 of a mil.

Except for initial zeroing the Horus Reticle, the need to adjust elevation and windage knobs is eliminated, thus saving time. Errors and malfunctions due to wear and tear on the reticle adjustments is also eliminated.

Once the values for the custom reticle have been calculated, plotted and proven by live fire, you are ready for combat use. There are no more calculations for bullet drop, wind or lead. No more dialing in "come-ups" and counting clicks. Your only math is simple division for range.



Bullet Drop Compensation for the Horus Reticle



**HORUS RETICLES
for
MILITARY AND POLICE**

SPECIFICATIONS

Horus Reticle formatted for Military and Police

Range finder and targeting grid based on:

A circle = 6283 MILS
1 MIL = 3.60 in @ exactly 100 yds.
1 MIL = 10.0 cm @ exactly 100 meters

The Horus Reticle is uniquely engineered to facilitate shooting at any number of unknown ranges. The design allows the rifleman to shoot from close range to very long range without any mechanical adjustments.

The Horus Reticle is user friendly:

1. The reticle is composed of two parts:
 - The Range Finder
 - The Targeting Grid
2. Both the range finder and the targeting grid are calibrated in USMC MILS.
3. Range finder allows accurate measurement to .10 of a MIL.
**
Central targeting grid allows for elevation adjustment. You can see the entire practical killing range of your bullet.
4. Wind deflection allows for 20 to 30 mph wind correction at 90 degrees.
5. Theoretical lead on moving targets.
6. Second shot correction.

Warning: The 2% difference.

When reading books and manuals, you must check and be sure that tables and math formulas are specifically set-up for U.S. Marine Corp. format.

Do not use any data that is shown in U.S. Army Mil DOT format. If you use this data in any calculation, you will pick-up a 2% error. The problem created by this error becomes evident in ranges in excess of 800 yards.

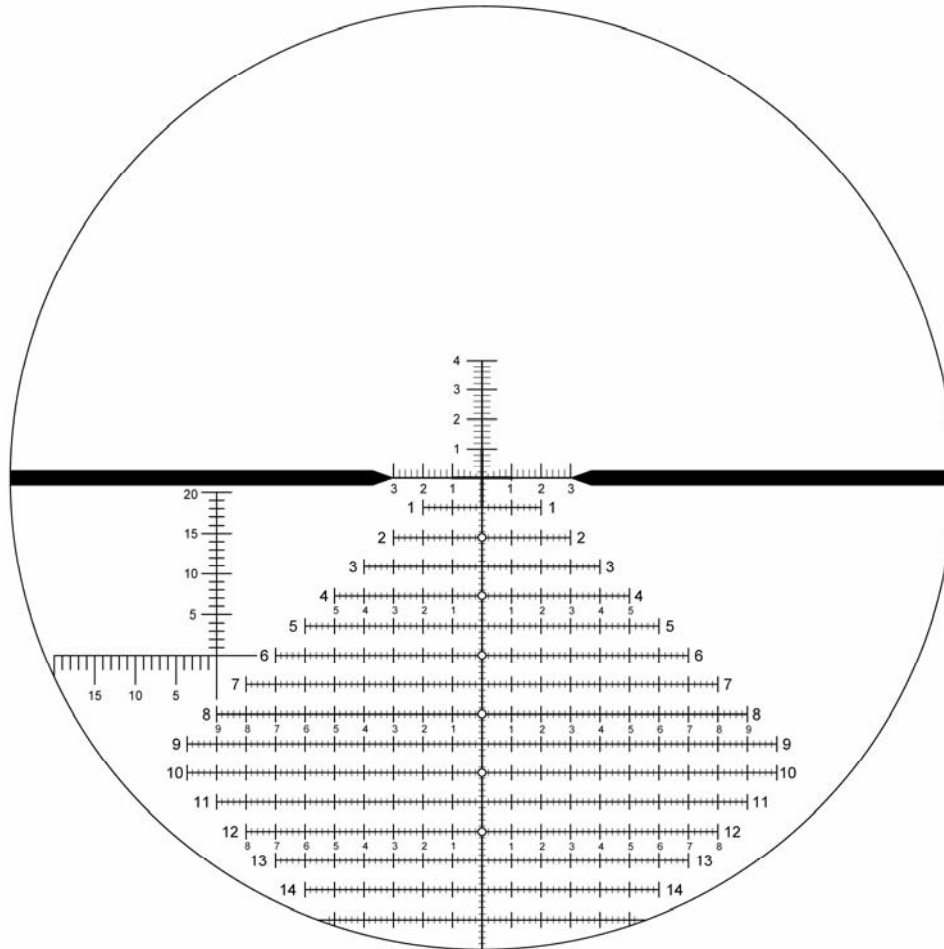
The current Mil DOT scopes with a simple crosshair and 16 DOTS provide the basic foundation for long range shooting.

** For operators schooled in the American system of inches and yards, some of our military reticles feature a range finder calibrated in IOA (Inches of Angle). Accurate measurement to 1/4 inch at 100 yards.

MID-RANGE - ILLUMINATED H-25

AVAILABLE

HORUS VISION 4-16X50 - MODEL H-25



The H-25 Reticle is an illuminated tactical reticle for low light and standard conditions. The intensity of illumination is controlled by a rheostat so the rifleman can use night vision devices attached to the scope and still clearly see the reticle. For simplicity in ranging, the H-25 has two rangefinders: the central crosshair is in Milradians and the rangefinder in the lower left quadrant is in Inches of Angle. The H-25 is calibrated for point blank to approximately 1000 yards. The H-25 is an excellent choice for the 223 Remington (5.56) or the 308 Winchester (7.62). This reticle also works equally well with the 50 BMG and 338 Lapua.

H-25

What does the Horus Reticle do ?

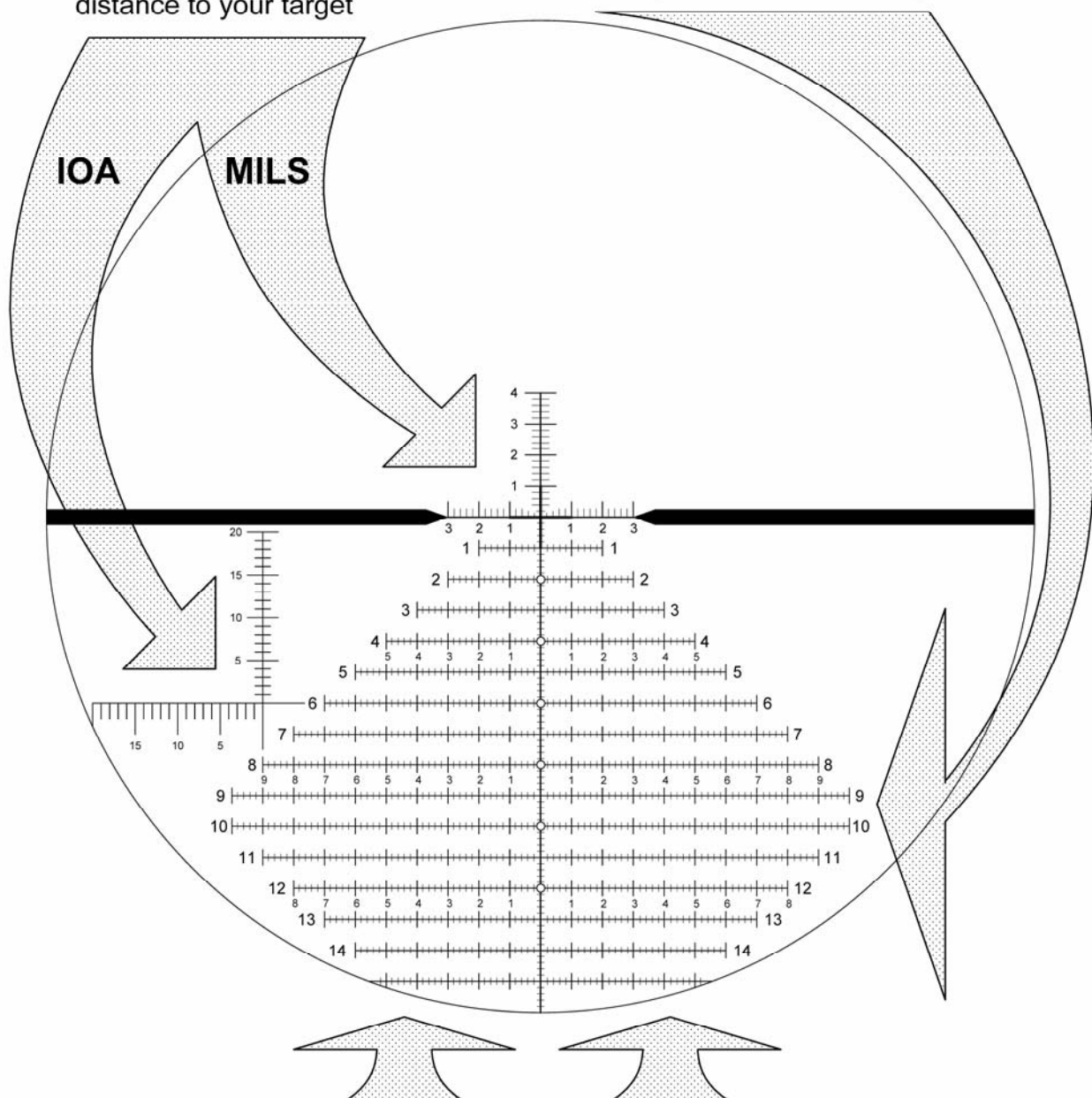
MID-RANGE - ILLUMINATED

1 RANGEFINDER

Use the rangefinder to determine the distance to your target

2 TARGETING GRID

Use the verticle grid to compensate for bullet drop



3 HORIZONTAL TARGETING LINES

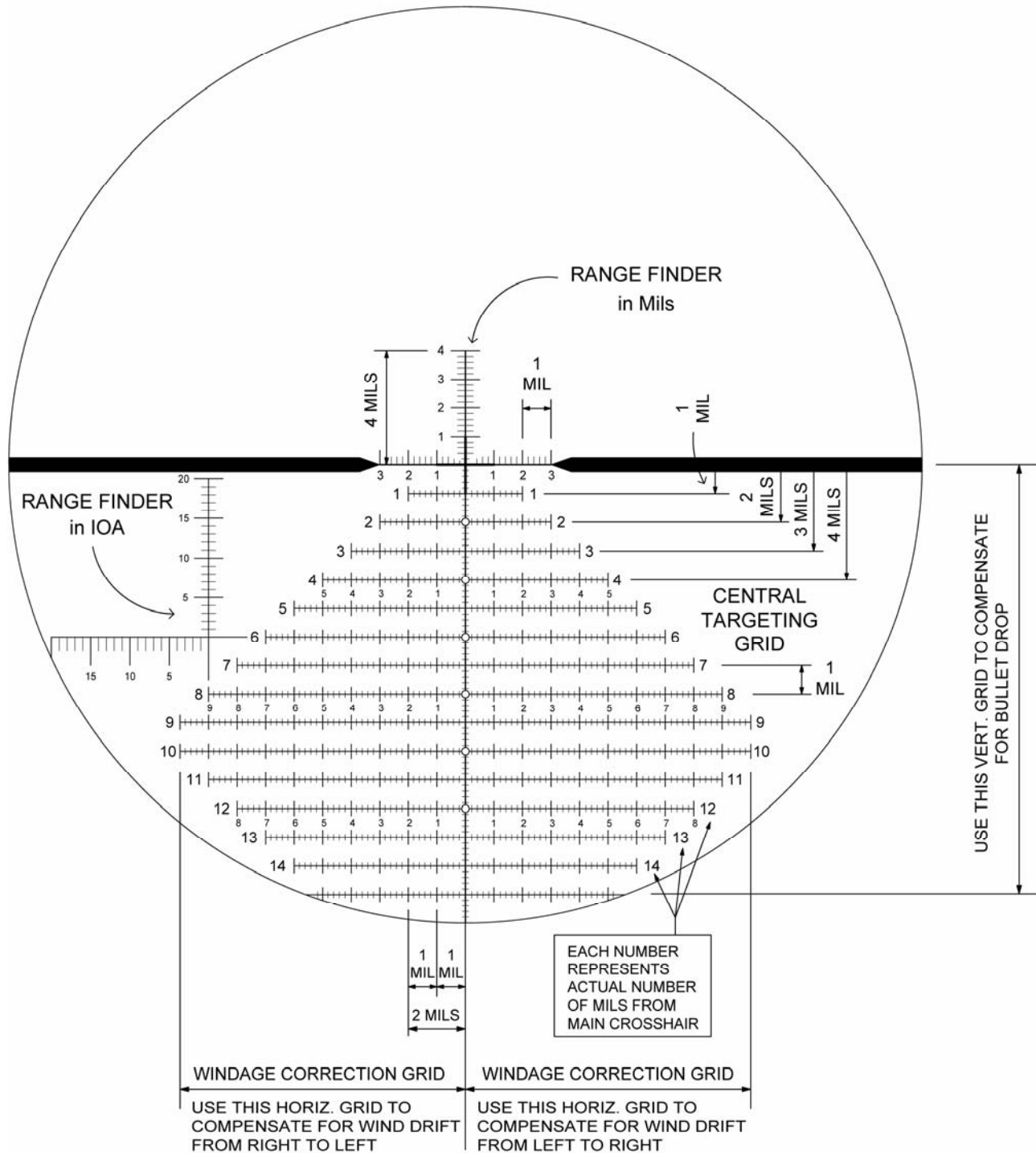
Use the horizontal lines to compensate for:

- a) Wind
- b) Lead
- c) 2nd Shot Correction

SPECIFICATIONS

H-25

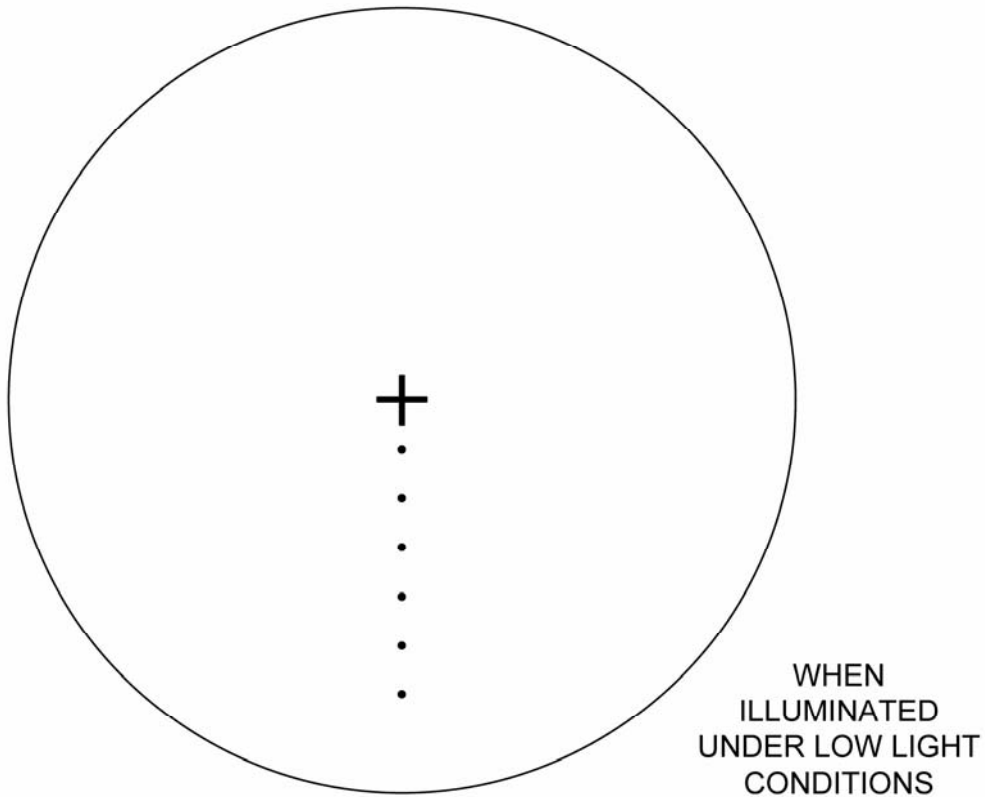
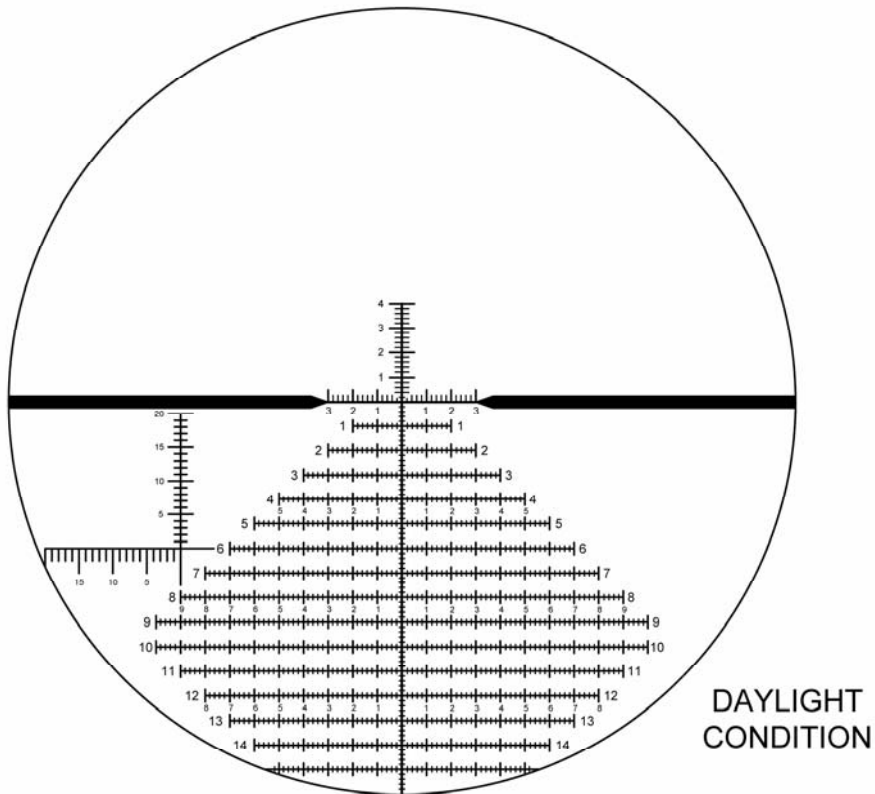
MID-RANGE - ILLUMINATED



H-25

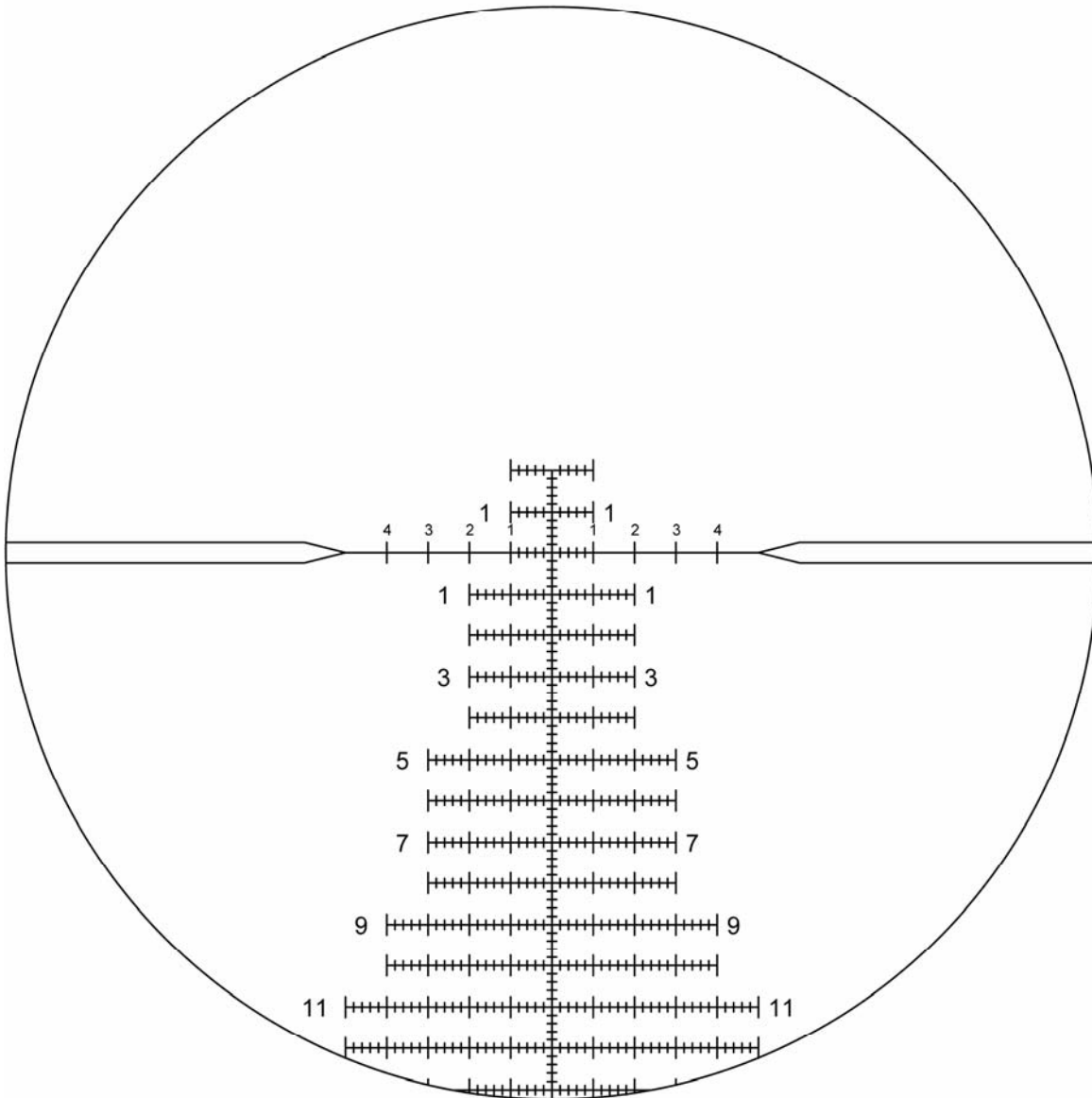
ILLUMINATED H - 25 RETICLE

The following illustrates how the reticle looks in daylight and low light.



MID RANGE - ILLUMINATED H-27

Available Scopes for the H-27 Reticles:
Horus Vision 4-16x50



The H-27 Reticle was specifically designed for military use. Illumination is controlled by a rheostat so the rifleman can adjust the intensity for twilight conditions. This controlled illumination also allows the rifleman to use night vision devices attached to the scope and still clearly see the reticle. The H-27 will work with any type of ammunition such as the 223 Remington (5.56) or the 308 Winchester (7.62).

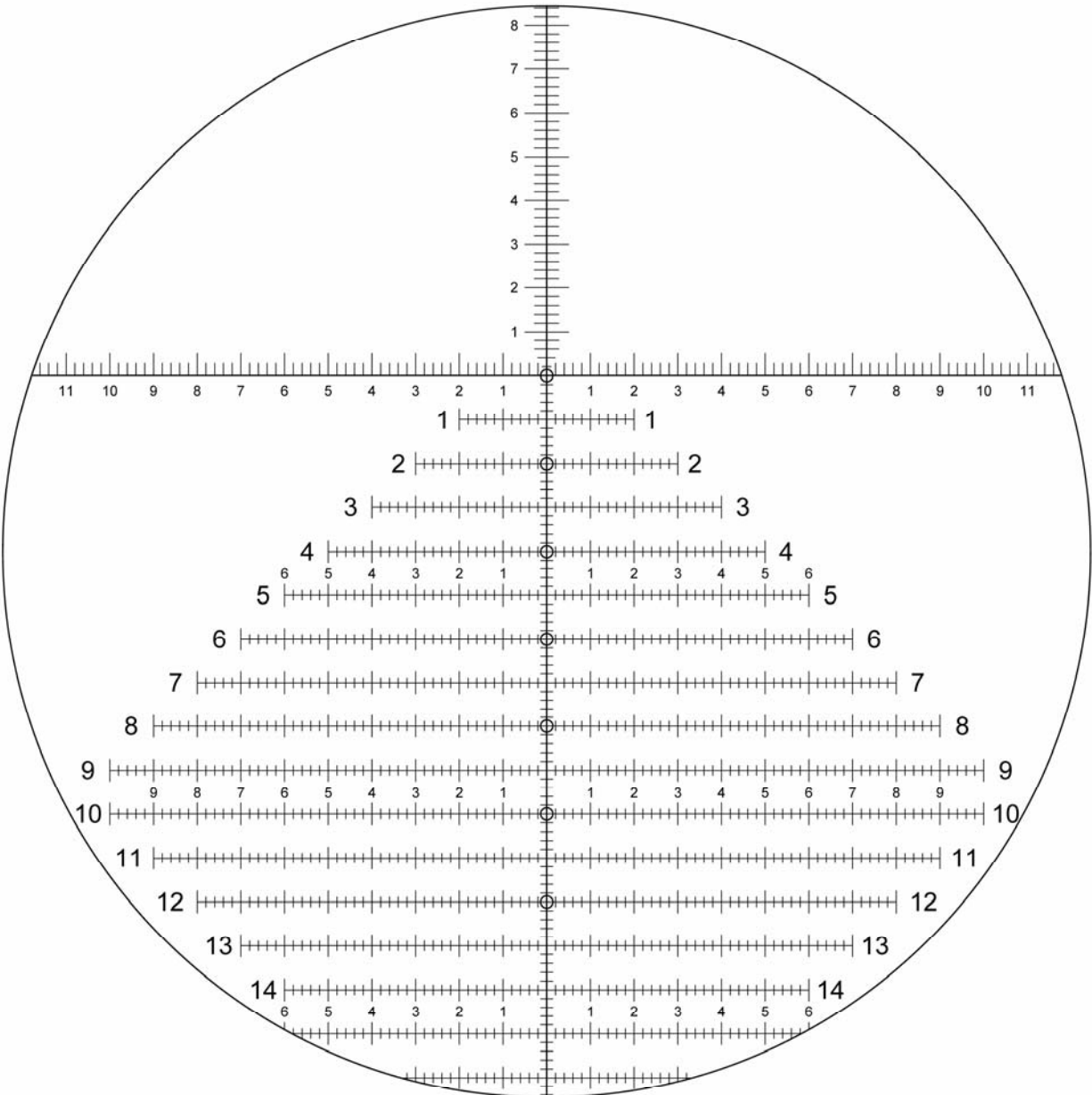
H-37

ULTRA LONG RANGE

Available Scope for the H-37 Reticle:

Illuminated & Non- Illuminated

Horus Vision 4-16x50

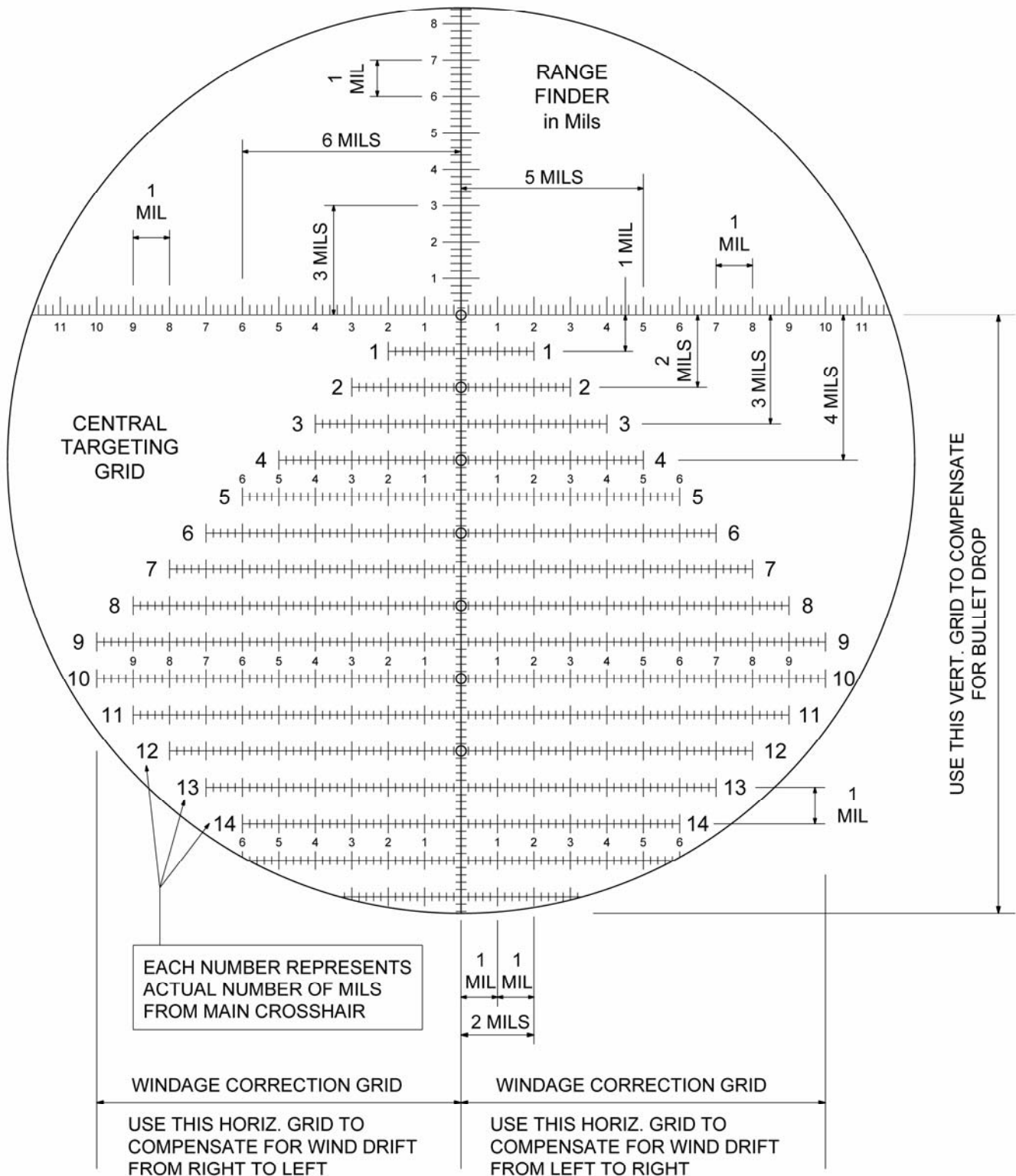


The H-37 Reticle is a highly calibrated reticle that allows very quick, precise shooting at extended ranges to approximately 2500 yards. The H-37 Reticle is an excellent choice for the 50 BMG or the 338 Lapua.

SPECIFICATIONS

ULTRA LONG RANGE

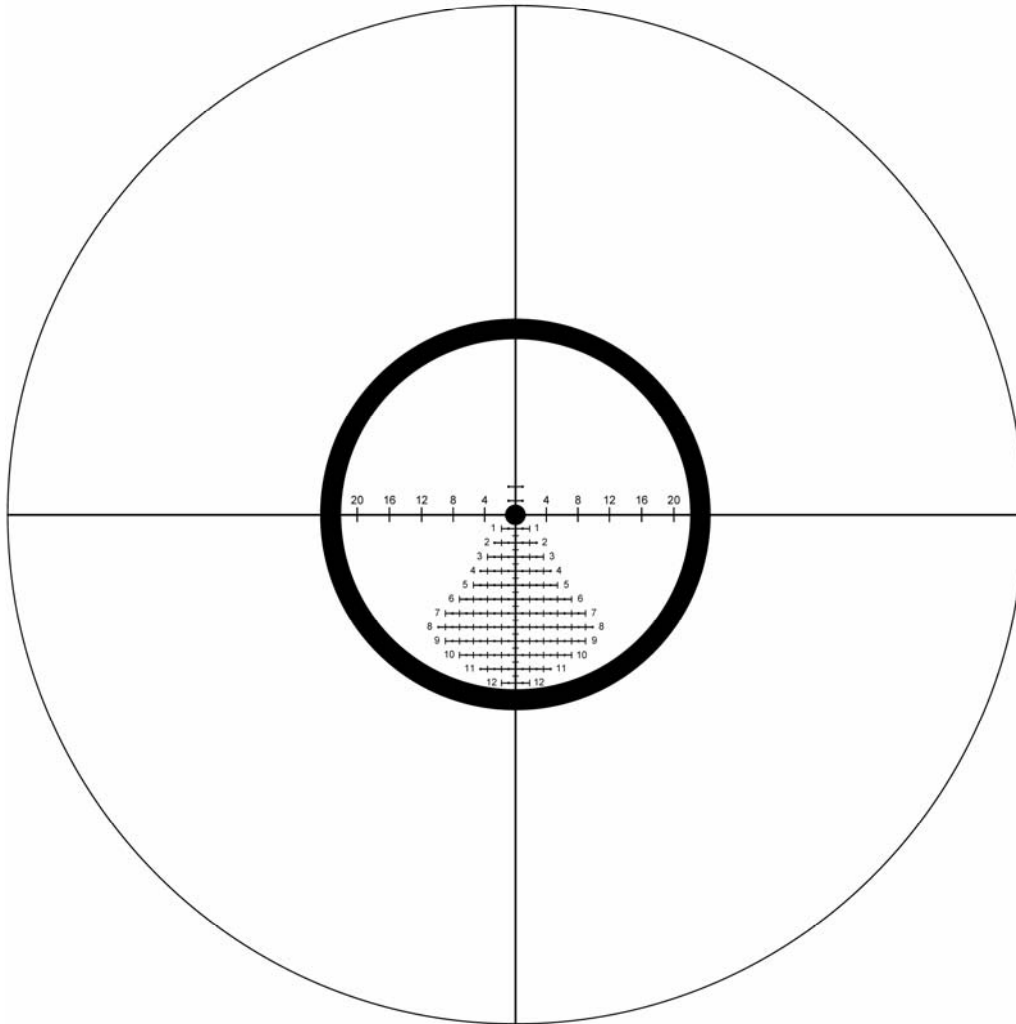
H-37



CLOSE TO MID RANGE ILLUMINATED

H-48

Horus Vision 1-4x24
with H-48 CQB Reticle



The H-48 Reticle was designed for very quick acquisition tactical shooting at point blank to 200 meters. It was specifically designed for a low powered CQB optic. However, it has the patented Horus Targeting Grid embedded on the reticle, which allows the user the ability to engage targets at plus or minus 800 meters. Simply, this is a universal reticle that can expand the range of assault type weapons. When illuminated, the entire H-48 reticle is illuminated. The H-48 works best in a variable power riflescope, when used at 1X at close range it presents a small bold ghost ring with a small central dot that forces the eye to focus on the center of the field of view. For mid-range, with the optic set at 3X or 4X, the bold ghost ring forces the rifleman's eye to the center of the ghost ring. Simply, if you target is located in the ghost ring, a hit is assured. At long range the targeting is handled by the Horus Targeting Grid, which is embedded in the H-48 reticle. This manual will provide instruction on the use of the Horus Targeting Grid. The H-48 works well with assault type weapons and the cartridges they use.

The Horus Vision® H-36™ Reticle

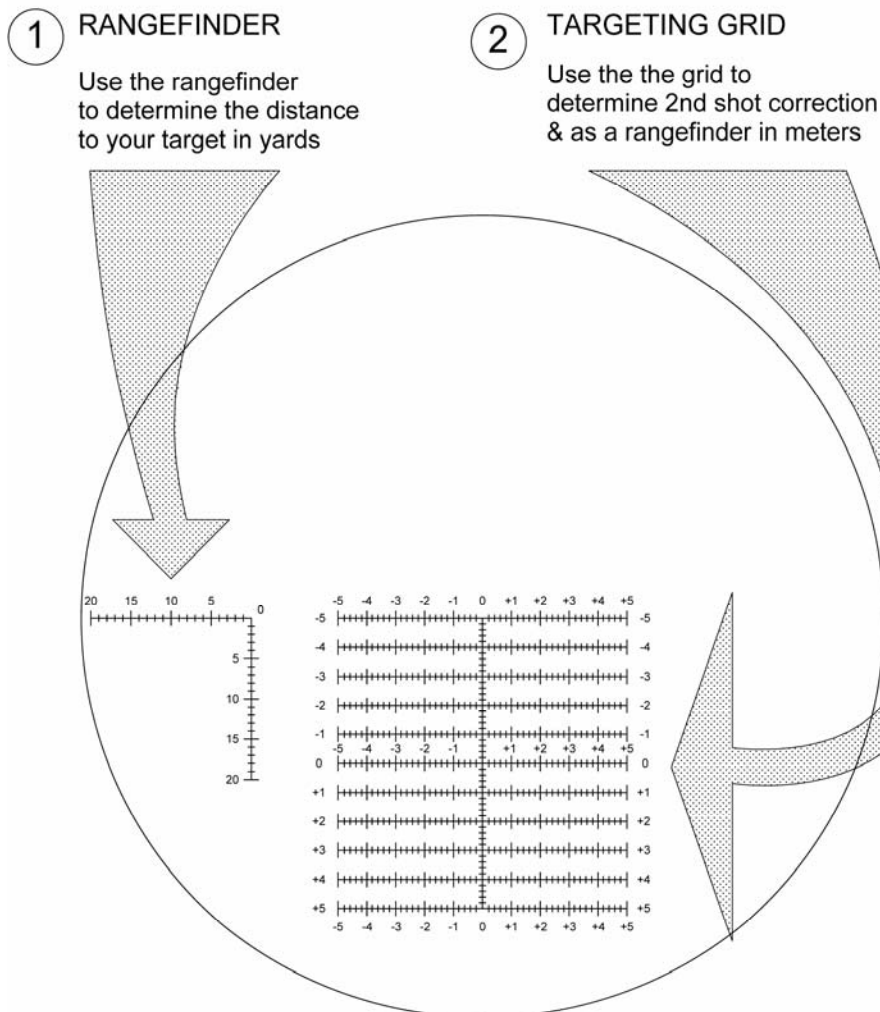
SPOTTING SCOPE RETICLE

The Horus Vision® H-36™ Reticle is a highly calibrated reticle and is installed in the internal optics of the spotting scope. It is a powerful tool in both range estimation and “2nd Shot Correction”™. The Reticle is located in the First Focal Plane of the scope, therefore calibration and accuracy are unaffected by power changes even though the reticle appears to change size.

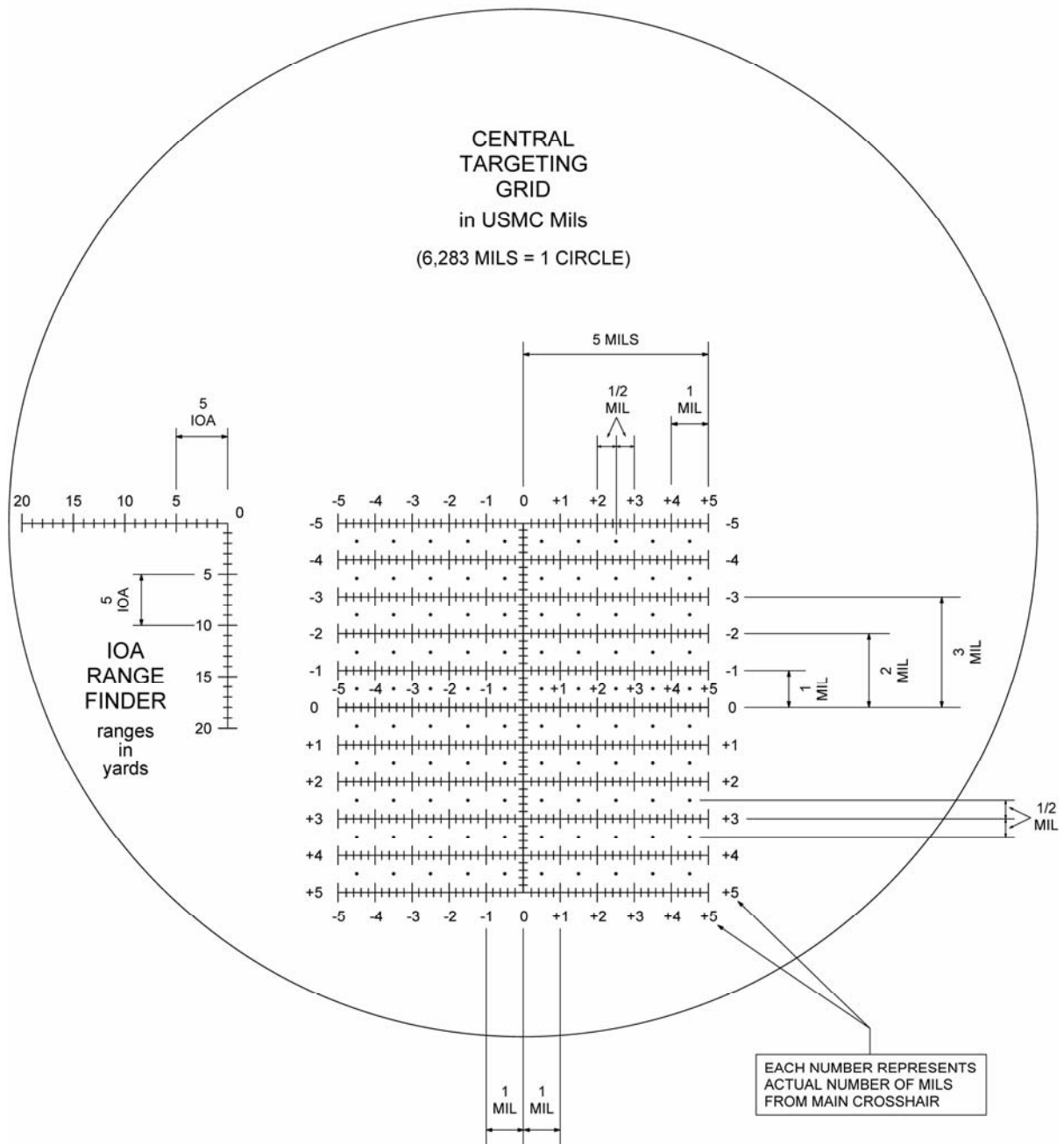
The Range Finder is a built in feature which eliminates the need to carry another piece of range finding equipment such as Laser Range Finders. This means less equipment to carry and to ‘fumble with’...equipment subject to breakdowns, low battery problems, etc. Additionally, Laser Range Finders may reveal themselves to the target by an optical signature which will result in less than optimal consequences for the rifleman. Range Finding with the Horus Vision® H-36™ Reticle requires no batteries and no working parts subject to failure. There are two ‘Grids’ on the Horus Vision® H-36™ Reticle...(A) the Mil Radian Grid in the lower center of the optical view and (B) the Backward Inverted ‘L’.

What does the Horus Reticle do ?

H-36



H-36



USING THE SPOTTING SCOPE WITH THE H-36 RETICLE FOR SECOND SHOT CORRECTION™

All vari-power spotting scopes that employ the H-36™ reticle are in the 1st focal plane. All calibrations are accurate throughout the power ranges of the spotting scope. When using the spotting scope with the H-36™ reticle for 2nd shot correction, if necessary, please use the highest magnification that ambient conditions allow.

When the rifleman and the spotter are working as a team, the H-36™ Reticle becomes a valuable tool for increasing the lethality of the team because of its accurate ranging and patented 2nd Shot Correction feature. In the event the rifleman misses the 1st shot, the H-36™ Horus Reticle® features a unique non-mathematical method for the spotter to provide very accurate correctional fire data. This data allows the rifleman the ability to rapidly correct for his 2nd shot without taking his eye off of the target. See the following illustrated example:

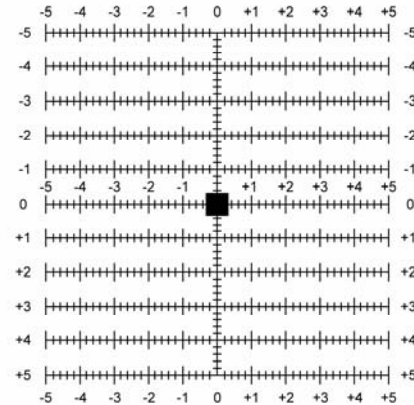
2ND SHOT CORRECTION - SPOTTING SCOPE

1



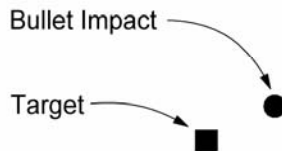
2

The spotter places the target to be engaged by the rifleman dead center in the grid at line 0



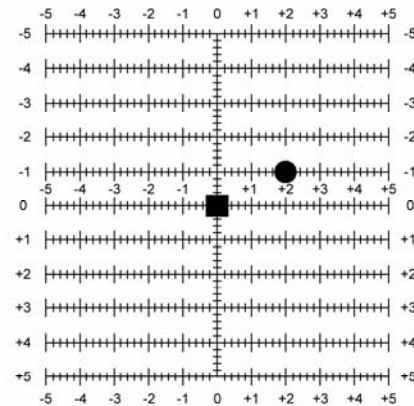
3

The rifleman fires and the spotter notes that the bullet impact is high and to the right.



4

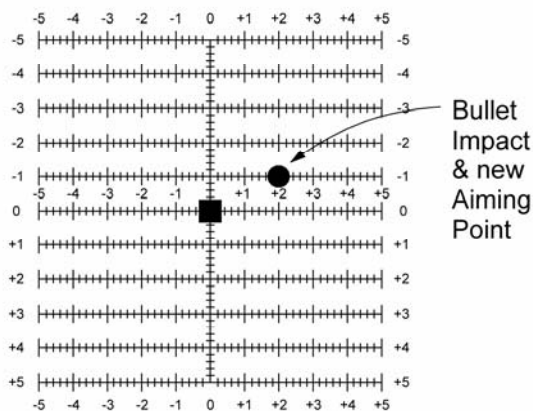
The spotter sees where the bullet hit and informs the rifleman that the impact is 1 mil up and 2 mils to the right.



Note: Bullet impact is on line +2 and 2 hackmarks to the right.

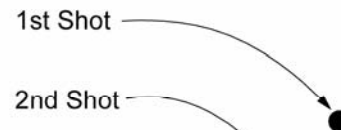
5

To correct his aim point, the rifleman moves his original aim point 1 Mil up & 2 Mils to the right as his new aiming point.



6

If you did everything properly, you should have a bullseye.



LIMIT OF ACCURACY

The boundaries of accuracy of the Horus Reticles are not limited by the reticle. The reticle's design is precisely etched on glass; the reticle remains static. The patented reticle allows you to see the entire practical killing range of your bullet.

The limits are determined by your rifle's ability to shoot a respectable group with the ammunition you have selected at ever increasing distance.

For accurate use of the Horus Reticle, the group should not exceed 1MOA. As the range increases, the bullets at some unknown range or point will lose their ability to group. That point is your maximal limit of accuracy. Naturally, you can shoot beyond that point but your probability of a first shot hit decreases.

TARGETING SOFTWARE

Our software program helps the rifleman hit targets at all ranges. Versions of the software can run on desktop, laptop or hand-held computers. The program requires the rifleman to enter fixed data about their rifle and ammo. In addition, environmental data (temperature and barometric pressure) is also required. Factors such as wind speed and direction, and the speed of moving targets can also be included. Once all data are entered, the computer will calculate the proper line to hold-on.

Horus Vision also offers specialized software. For example: if you have a special ultra long range application ; our advanced "MP" version factors the coriolis effect and spin drift to insure that 1st round hit. To select the software best for your operation, please refer to our brochure.

SETTING -UP THE HORUS SYSTEM: CUSTOM INSTALLATION

This section explains how to customize the Horus Vision Reticle for:

- > Your Rifle
- > Your Ammo
- > Your Environmental Conditions

A) Install the Horus ATRAG Aiming Point Software on your Desktop or Laptop personal computer.

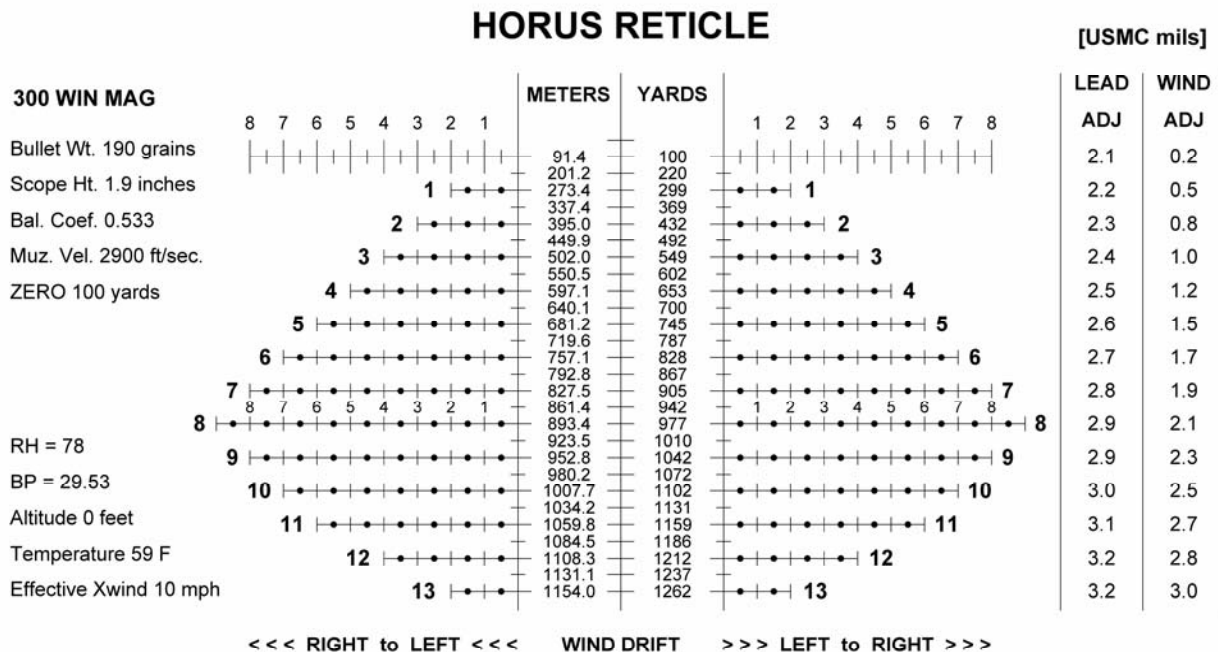
Once it is intalled:

- * Enter rifle data
- * Enter ammo data
- * Enter environmental data

B) Compute and printout data from the ATRAG Aiming Point Software.

The printout for come-ups and windage will be generated.

(Note: Using Desktop or Laptop computer and printer)



C) Field Work

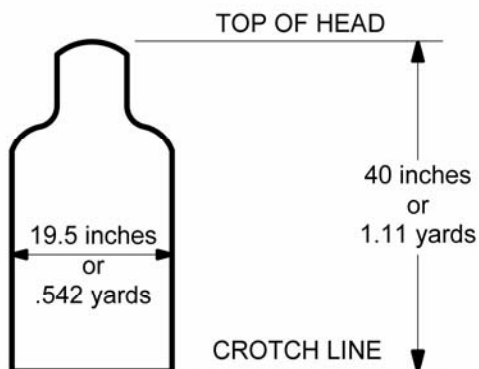
- * Zero your rifle.
- * Confirm the computer projected range values by live fire (test firing).

How to use the Horus Reticle

This is a brief overview of how to use the Horus Reticle.
Please refer to each corresponding section in this book for a detail explanation of items 1 through 4 below.

1 TARGET

Know the standard size of your target.



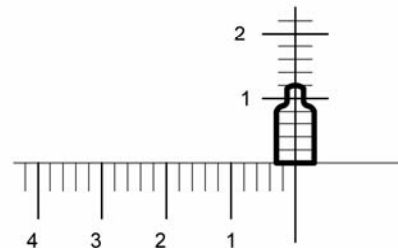
MILITARY TORSO TARGET

- a) Paper
- b) Plastic for Auto target

2 RANGE FINDER (Mil Method)

Determine distance of the target with the Range Finder.

FORMULA:
$$\frac{\text{Target Height (in yards)}}{\text{Range Finder Measurement}} \times 1000 = \text{Yards}$$



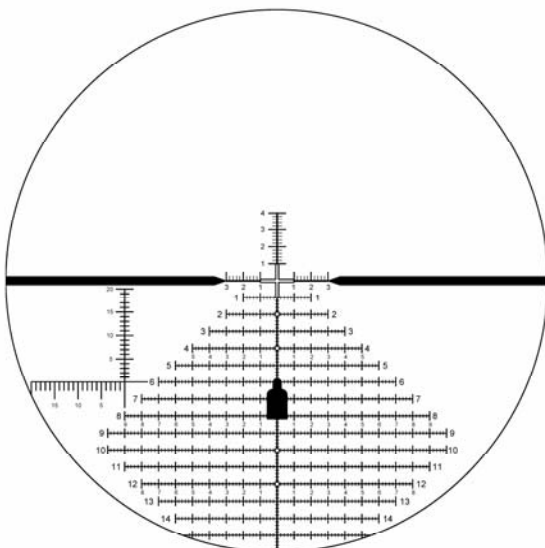
Target Height = 1.11 yards

Range Finder Measurement = 1.2

$$\frac{1.11}{1.2} \times 1000 = 925 \text{ Yards}$$

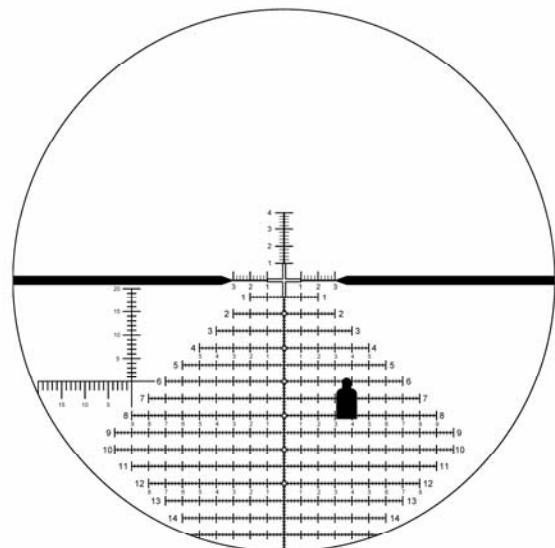
3 USE TARGET GRID

On the Central Targeting Grid, find the yardage value that matches Range Finder calculations. We used a 300 Win Mag for this example. The ballistic calc. for a 300 Win Mag indicates 905 yards at around line 7.



4 WINDAGE CORRECTION

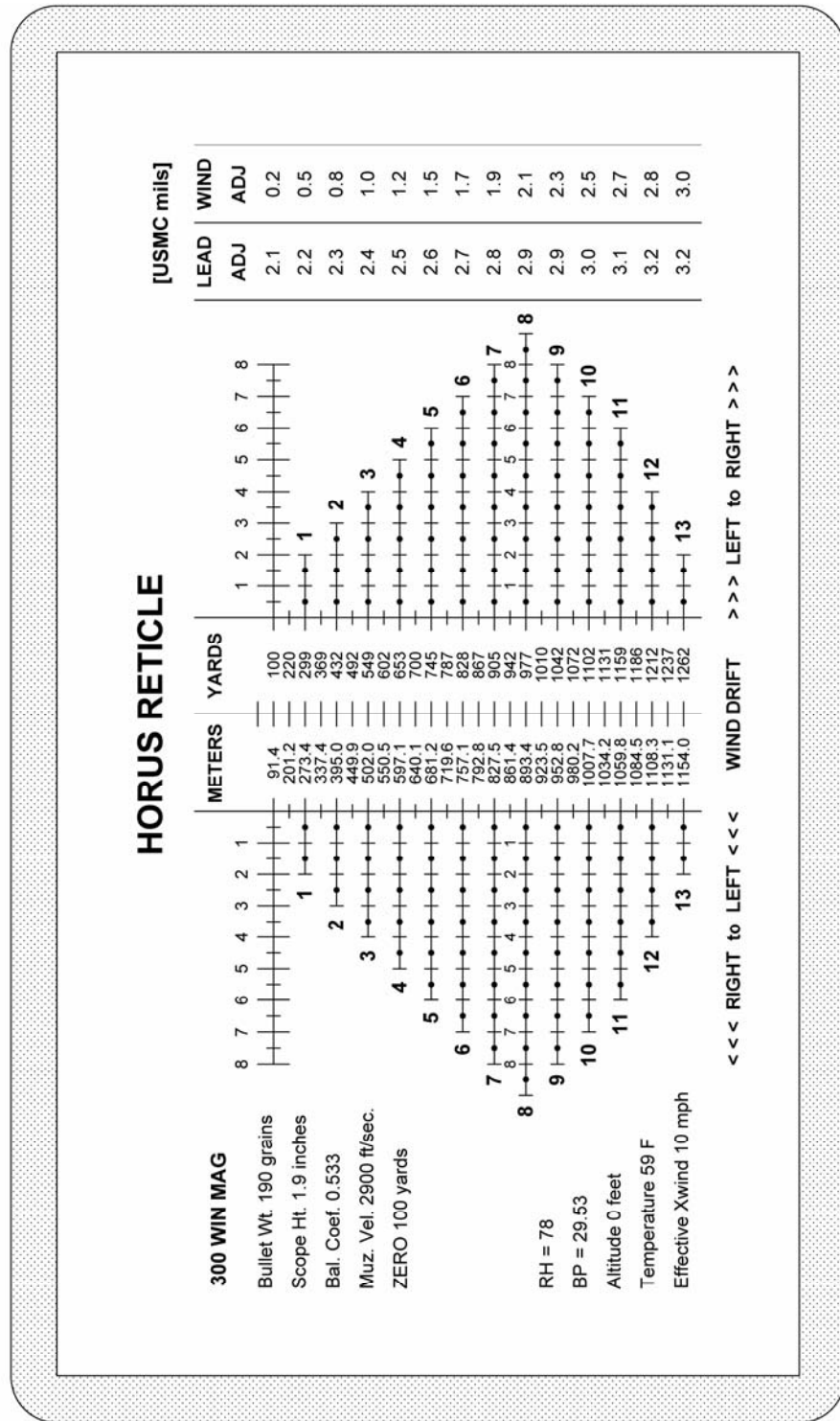
We will assume a 20 MPH wind from left to right for this example. The ballistic calc. for a 300 Win Mag indicates a 20 MPH wind at line 7 at 3.75 Hackmarks to the right.



The Final Product

When all ballistics calculations and live fire testing have been completed, you should print a range card that gives targeting grid values (meters or yards), windage points and lead values. This range card should be laminated, then attached to your rifle stock or carried in your pocket. (note: Horus Vision recommends that you make several copies in the event you lose one).

300 WIN MAG



Note: The above graphic is an example of a printout from your Desktop or Laptop. See our section on "Palm" for field use.

BP	29.53	Temp	59°F	FPS	2900	Humidity	78%	BH	1.9"	W/E	10 mph		
Gun	300 WIN	Twist	10	Bullet	SIERRA HPBT	BC	.533	Scope	Horus 4-14				
Y / M	50	75	150	200	250	300	325	350	375	400	425	450	475
Elevation	-0.22	-0.02	+0.14	0.39	0.68	1.00	1.18	1.36	1.55	1.74	1.94	2.14	2.35
Windage	0.08	0.13	0.26	0.34	0.42	0.51	0.55	0.60	0.65	0.70	0.76	0.81	0.86
Y / M	500	525	550	575	600	625	650	675	700	725	750	775	800
Elevation	2.57	2.79	3.01	3.25	3.48	3.72	3.97	4.23	4.50	4.78	5.06	5.36	5.66
Windage	0.91	0.96	1.01	1.07	1.12	1.18	1.23	1.29	1.36	1.42	1.49	1.55	1.62
Y / M	825	850	875	900	925	950	975	1000	1025	1050	1075	1100	1125
Elevation	5.97	6.28	6.61	6.93	7.27	7.62	7.98	8.35	8.74	9.13	9.55	9.97	10.41
Windage	1.69	1.75	1.82	1.89	1.95	2.03	2.10	2.17	2.24	2.32	2.40	2.48	2.56

BP		Temp		FPS		Humidity		BH		W/E			
Gun		Twist		Bullet		BC		Scope					
Y / M	50	75	150	200	250	300	325	350	375	400	425	450	475
Elevation													
Windage													
Y / M	500	525	550	575	600	625	650	675	700	725	750	775	800
Elevation													
Windage													
Y / M	825	850	875	900	925	950	975	1000	1025	1050	1075	1100	1125
Elevation													
Windage													

BP		Temp		FPS		Humidity		BH		W/E			
Gun		Twist		Bullet		BC		Scope					
Y / M	50	75	150	200	250	300	325	350	375	400	425	450	475
Elevation													
Windage													
Y / M	500	525	550	575	600	625	650	675	700	725	750	775	800
Elevation													
Windage													
Y / M	825	850	875	900	925	950	975	1000	1025	1050	1075	1100	1125
Elevation													
Windage													

BP		Temp		FPS		Humidity		BH		W/E			
Gun		Twist		Bullet		BC		Scope					
Y / M	50	75	150	200	250	300	325	350	375	400	425	450	475
Elevation													
Windage													
Y / M	500	525	550	575	600	625	650	675	700	725	750	775	800
Elevation													
Windage													
Y / M	825	850	875	900	925	950	975	1000	1025	1050	1075	1100	1125
Elevation													
Windage													

BP		Temp		FPS		Humidity		BH		W/E			
Gun		Twist		Bullet		BC		Scope					
Y / M	50	75	150	200	250	300	325	350	375	400	425	450	475
Elevation													
Windage													
Y / M	500	525	550	575	600	625	650	675	700	725	750	775	800
Elevation													
Windage													
Y / M	825	850	875	900	925	950	975	1000	1025	1050	1075	1100	1125
Elevation													
Windage													

SETTING UP THE HORUS VISION SYSTEM: QUICK START

For Those Who Want to Get Going Right Away

For those of you who want to start using the Horus Reticle right away, we have calculated the values for selected factory loads in several popular calibers.

The following charts giving yardage and metric values for various cartridges will put you in the ballpark. But these values are only a starting point. There is no way for a computer program to predict exactly how that bullet will shoot in a particular rifle. You must test fire to confirm the data.

Note: All calculations are based on standard barometric pressure, temperature, relative humidity (army standard metro).

To use Quick Start:

1. Mount the scope on your rifle. To be sure that the rifle is not canted in long-range shooting, you can attach a level or anti-cant device to the scope tube, or use leveling dots located on the top and side of the Horus scope to properly align the scope.
2. Use one of the factory ammo loads specified in the table.
3. If the quick start chart calls for a 100 yard zero or a 100 meter zero, sight the rifle in at exactly 100 yards or 91.4 meters *if* you are using the pre-calculated charts in the following pages. (minimum of five shots for absolute confirmation).
4. You can now use the values assigned to each grid line.
Remember that these yardage values are only a starting point. There is no way for a computer program to predict exactly how a cartridge will shoot in a particular rifle. **You must test the values on the range and adjust them as necessary.**
5. **Test firing.** You are now ready to confirm the yardage values for each line of the grid by actual live fire. Using listed values as a starting point and your own trial-and-error experience firing groups at various distances, you will be able to fine-tune the Horus Reticle yardage value to match your rifle and the weather conditions.
6. You have selected a target at a known range. Consult the quick start chart for your caliber for the exact number (and/or fraction) on the central targeting grid that you must hold for the bullet to impact the target at the range you selected. Adjust for windage. Shoot.

HORUS OVERVIEW OF POPULAR CARTRIDGES

**Target aiming point data computed by the Horus TRAG1S5
desktop software that is included with every scope.**

**For field use, we recommend our PALM software, Horus ATRAG,
allowing “real time” data entry.**

Horus Reticle

U.S.M.C.

Targeting Grid

SOFTWARE

HORUS VISION TRAG 1S5
AIMING POINT SOFTWARE

FACTORY AMMO
FEDERAL GOLD MEDAL
SIERRA HPBT MATCHKING
223 REMINGTON

BULLET WT. 69 gr.
VELOCITY 3000 ft./ sec.
ZERO 100 yards
SCOPE HT. 1.9 in.
HOLDOVER @ 100 YARDS 0
B.C. 0.301
ARMY STANDARD METRO

HORUS RETICLE

[USMC mils]

223 Remington (Federal Gold Metal Sierra HPBT)

	METERS	YARDS		LEAD	WIND
				ADJ	ADJ
Bullet Wt. 69 grains	91.4	100		2.1	0.3
Scope Ht. 1.9 inches	196.6	215		2.3	0.9
Bal. Coef. 0.301	261.5	286		2.5	1.3
Muz. Vel. 3000 ft/sec.	317.3	347		2.6	1.7
ZERO 100 yards	367.6	402		2.8	2.1
	410.6	449		2.9	2.4
	449.9	492		3.1	2.8
	487.4	533		3.2	3.1
	521.2	570		3.3	3.3
	553.2	605		3.4	3.6
	582.5	637		3.5	3.8
	609.9	667		3.6	4.1
	635.5	695		3.7	4.3
	660.2	722		3.7	4.5
	683.1	747			
	705.0	771			
	726.0	794			
	746.2	816			
	765.4	837			
	784.6	858			
	802.8	878			
	820.2	897			
	836.7	915			
	854.0	934			
	869.6	951			
	886.1	969			
	901.6	986			

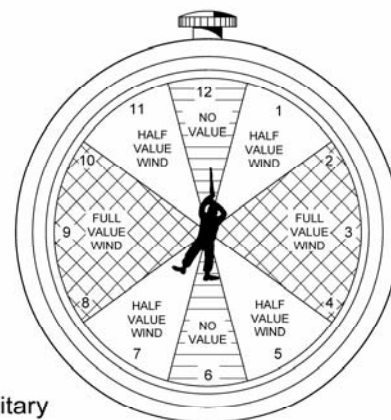
<<< RIGHT to LEFT <<<

WIND DRIFT

>>> LEFT to RIGHT >>>

Shown with targeting range
in both meters and yards
and with full windage values
at 3 and 9 o'clock

Yardage Values for the grid are based on calculations from a ballistic software program. The yardage values will give you an excellent starting point. To achieve accurate values for each grid line, you must test fire the rifle at a variety of distances. (see section on "Test Firing"). Never accept computer generated ballistic tables as the final authority.



Clock System
Courtesy of U.S. Military

Horus Reticle

U.S.M.C.

Targeting Grid

SOFTWARE

HORUS VISION TRAG 1S5
AIMING POINT SOFTWARE

FACTORY AMMO
FEDERAL GOLD MEDAL
HPBT SIERRA MATCHKING
308 WINCHESTER

BULLET WT. 175 gr.
VELOCITY 2600 ft./ sec.
ZERO 100 yards
SCOPE HT. 1.9 in.
HOLDOVER @ 100 YARDS 0
ARMY STANDARD METRO

HORUS RETICLE

[USMC mils]

308 Winchester

Bullet Wt. 175 grains
Scope Ht. 1.9 inches
Bal. Coef. 0.496
Muz. Vel. 2600 ft/sec.
ZERO 100 yards

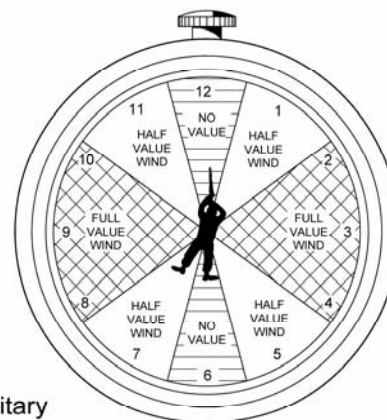
RH = 78
BP = 29.53
Altitude 0 feet
Temperature 59 F
Effective Xwind 10 mph

	METERS	YARDS		LEAD	WIND
				ADJ	ADJ
8 7 6 5 4 3 2 1	91.4	100	1 2 3 4 5 6 7 8	2.3	0.2
	174.7	191		2.5	0.5
1	233.2	255	1	2.6	0.8
2	286.2	313	2	2.7	1.0
3	333.8	365	3	2.8	1.3
4	380.4	416	4	2.9	1.5
5	423.4	463	5	3.0	1.7
6	462.7	506	6	3.0	2.0
7	500.2	547	7	3.1	2.2
8	535.8	586	8	3.2	2.4
9	570.6	624	9	3.3	2.6
10	604.4	661	10	3.3	2.7
11	636.4	696	11	3.4	2.9
12	667.5	730	12	3.5	3.1
13	696.8	762	13		
	725.1	793			
	751.6	822			
	777.2	850			
	802.8	878			
	826.6	904			
	851.3	931			
	874.2	956			
	896.1	980			
	918.1	1004			
	938.2	1026			
	959.2	1049			
	979.3	1071			

<<< RIGHT to LEFT <<< WIND DRIFT >>> LEFT to RIGHT >>>

Shown with targeting range
in both meters and yards
and with full windage values
at 3 and 9 o'clock

Yardage Values for the grid are based on calculations from a ballistic software program. The yardage values will give you an excellent starting point. To achieve accurate values for each grid line, you must test fire the rifle at a variety of distances. (see section on "Test Firing"). Never accept computer generated ballistic tables as the final authority.



Clock System
Courtesy of U.S. Military

Horus Reticle

U.S.M.C.

Targeting Grid

FACTORY AMMO
308 WINCHESTER MAG
LAPUA LOCKBASE

SOFTWARE

HORUS VISION TRAG 1S5
AIMING POINT SOFTWARE

BULLET WT. 170 gr.
VELOCITY 2560 ft./ sec.
ZERO 100 yards
SCOPE HT. 1.9 in.
HOLDOVER @ 100 YARDS 0
ARMY STANDARD METRO

HORUS RETICLE

[USMC mils]

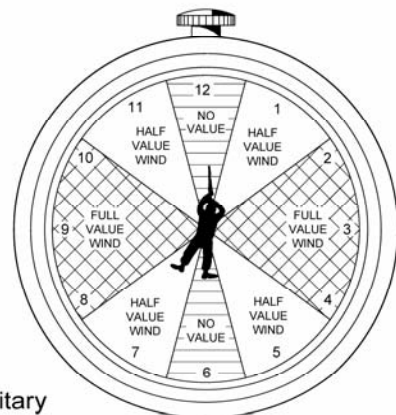
308 WIN (Lapua Lockbase)

		METERS	YARDS		LEAD	WIND
					ADJ	ADJ
Bullet Wt. 170 grains	8 7 6 5 4 3 2 1	91.4	100	1 2 3 4 5 6 7 8	2.4	0.2
Scope Ht. 1.9 inches		171.9	188		2.5	0.6
Bal. Coef. 0.49	1	228.6	250	1	2.6	0.8
Muz. Vel. 2560 ft/sec.	2	279.8	306	2	2.7	1.1
ZERO 100 yards	3	326.4	357	3	2.8	1.3
	4	372.2	407	4	2.9	1.5
	5	412.4	451	5	3.0	1.8
	6	450.8	493	6	3.1	2.0
	7	487.4	533	7	3.2	2.2
	8	523.0	572	8	3.2	2.4
	9	556.9	609	9	3.3	2.6
	10	588.9	644	10	3.4	2.7
	11	620.9	679	11	3.5	2.9
	12	651.1	712	12	3.5	3.1
	13	679.4	743	13		
RH = 78		706.8	773			
BP = 29.53		733.3	802			
Altitude 0 feet		758.0	829			
Temperature 59 F		782.7	856			
Effective Xwind 10 mph		806.5	882			
		830.3	908			
		852.2	932			
		874.2	956			
		895.2	979			
		916.2	1002			
		936.3	1024			
		955.5	1045			

<<< RIGHT to LEFT <<< WIND DRIFT >>> LEFT to RIGHT >>>

Shown with targeting range
in both meters and yards
and with full windage values
at 3 and 9 o'clock

Yardage Values for the grid are based on calculations from a ballistic software program. The yardage values will give you an excellent starting point. To achieve accurate values for each grid line, you must test fire the rifle at a variety of distances. (see section on "Test Firing"). Never accept computer generated ballistic tables as the final authority.



Clock System
Courtesy of U.S. Military

Horus Reticle

U.S.M.C.

Targeting Grid

SOFTWARE

HORUS VISION TRAG 1S5
AIMING POINT SOFTWARE

FACTORY AMMO
FEDERAL GOLD MEDAL
SIERRA BTHP MATCHKING
300 WIN MAG

BULLET WT. 190 gr.
VELOCITY 2900 ft./ sec.
ZERO 100 yards
SCOPE HT. 1.9 in.
HOLDOVER @ 100 YARDS 0
B.C. 0.533
ARMY STANDARD METRO

HORUS RETICLE

[USMC mils]

300 WIN MAG

Bullet Wt. 190 grains
Scope Ht. 1.9 inches
Bal. Coef. 0.533
Muz. Vel. 2900 ft/sec.
ZERO 100 yards

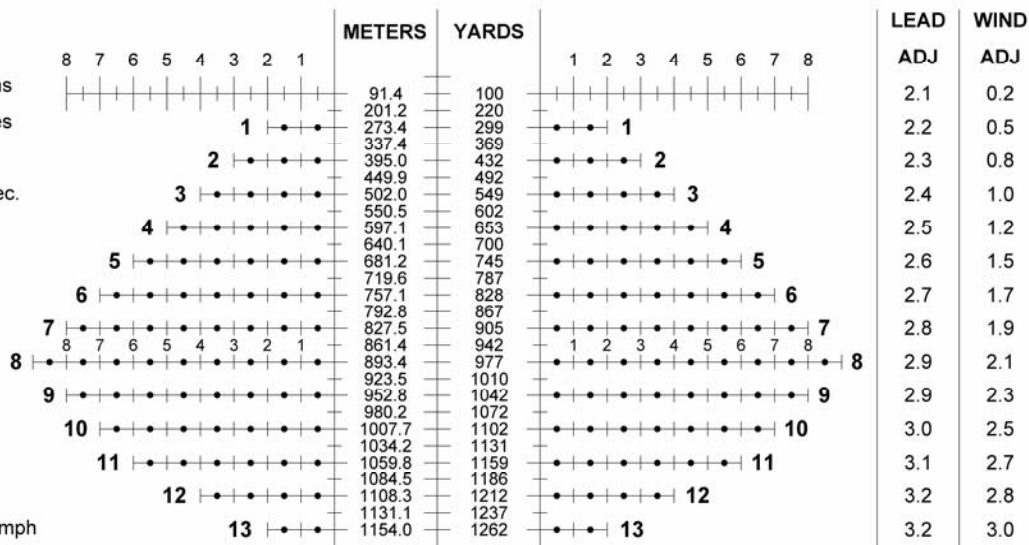
RH = 78

BP = 29.53

Altitude 0 feet

Temperature 59 F

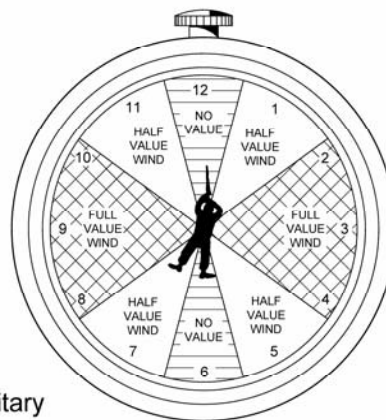
Effective Xwind 10 mph



<<< RIGHT to LEFT <<< WIND DRIFT >>> LEFT to RIGHT >>>

Shown with targeting range
in both meters and yards
and with full windage values
at 3 and 9 o'clock

Yardage Values for the grid are based on calculations from a ballistic software program. The yardage values will give you an excellent starting point. To achieve accurate values for each grid line, you must test fire the rifle at a variety of distances. (see section on "Test Firing"). Never accept computer generated ballistic tables as the final authority.



Clock System
Courtesy of U.S. Military

Horus Reticle

U.S.M.C.

Targeting Grid

SOFTWARE

HORUS VISION TRAG 1S5
AIMING POINT SOFTWARE

FACTORY AMMO
LAPUA
.338 LAPUA LOCKBASE

BULLET WT. 250 gr.
VELOCITY 3002 ft./ sec.
ZERO 100 yards
SCOPE HT. 1.9 in.
HOLDOVER @ 100 YARDS 0
B.C. 0.662
ARMY STANDARD METRO

HORUS RETICLE

[USMC mils]

.338 Lapua Lockbase

Bullet Wt. 250 grains

Scope Ht. 1.9 inches

Bal. Coef. 0.662

Muz. Vel. 3002 ft/sec.

ZERO 100 yards

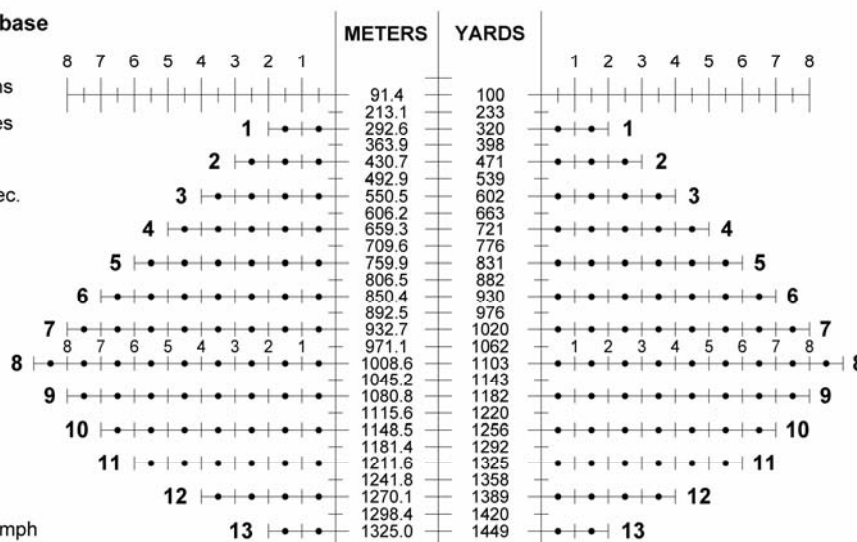
RH = 78

BP = 29.53

Altitude 0 feet

Temperature 59 F

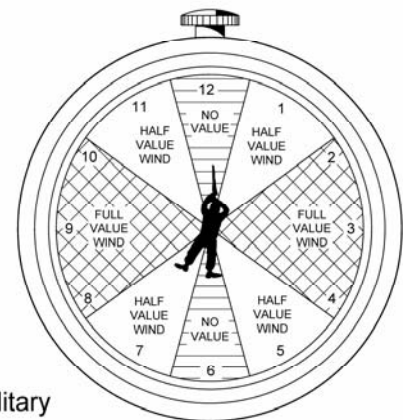
Effective Xwind 10 mph



<<< RIGHT to LEFT <<< WIND DRIFT >>> LEFT to RIGHT >>>

Shown with targeting range
in both meters and yards
and with full windage values
at 3 and 9 o'clock

Yardage Values for the grid are based on calculations from a ballistic software program. The yardage values will give you an excellent starting point. To achieve accurate values for each grid line, you must test fire the rifle at a variety of distances. (see section on "Test Firing"). Never accept computer generated ballistic tables as the final authority.



Clock System
Courtesy of U.S. Military

WORKSHEET

HORUS RETICLE

USMC

Ultra Long Range Reticle

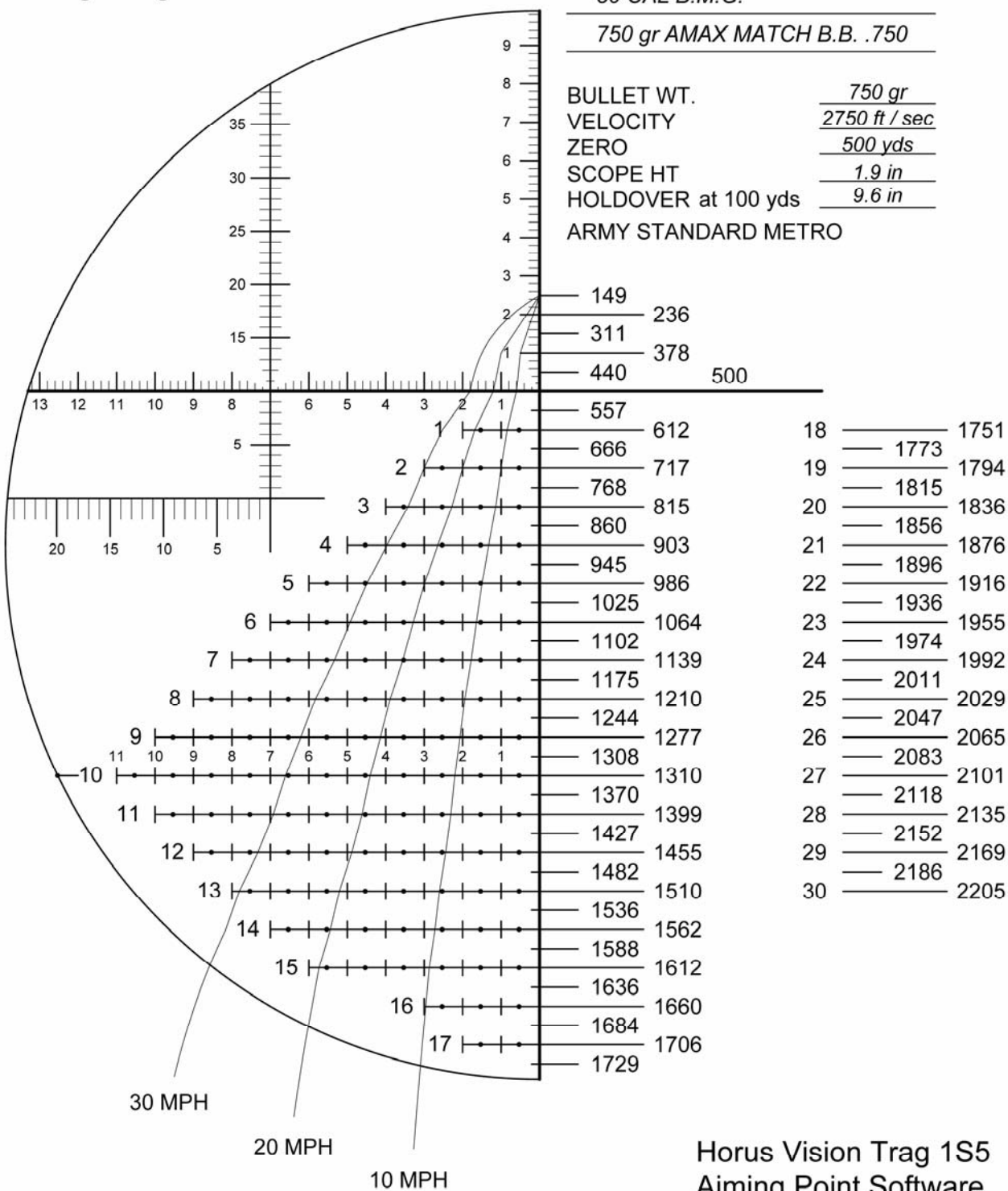
AMMO

50 CAL B.M.G.

750 gr AMAX MATCH B.B. .750

BULLET WT. 750 gr
 VELOCITY 2750 ft / sec
 ZERO 500 yds
 SCOPE HT 1.9 in
 HOLDOVER at 100 yds 9.6 in

ARMY STANDARD METRO



NOTE:

Data illustrated in a different format

Horus Vision Trag 1S5
Aiming Point Software

ENVIRONMENTAL EFFECTS ON LONG RANGE SHOOTING

The pursuit of accurate long range shooting requires the rifleman to adjust the distance values of the custom reticle when there is a significant change with environmental conditions. The custom reticle is unique because you can readjust the distance values to reflect changes in altitude, temperature, barometric pressure and relative humidity.

To illustrate these environmental factors, the following chart shows the difference between Australian outback conditions versus Northern California.

Performance data are from a Ruger 30-06 rifle with a 24" Harris Barrel firing Federal Classics 150 gr. 30-06 ammo from the same lot.

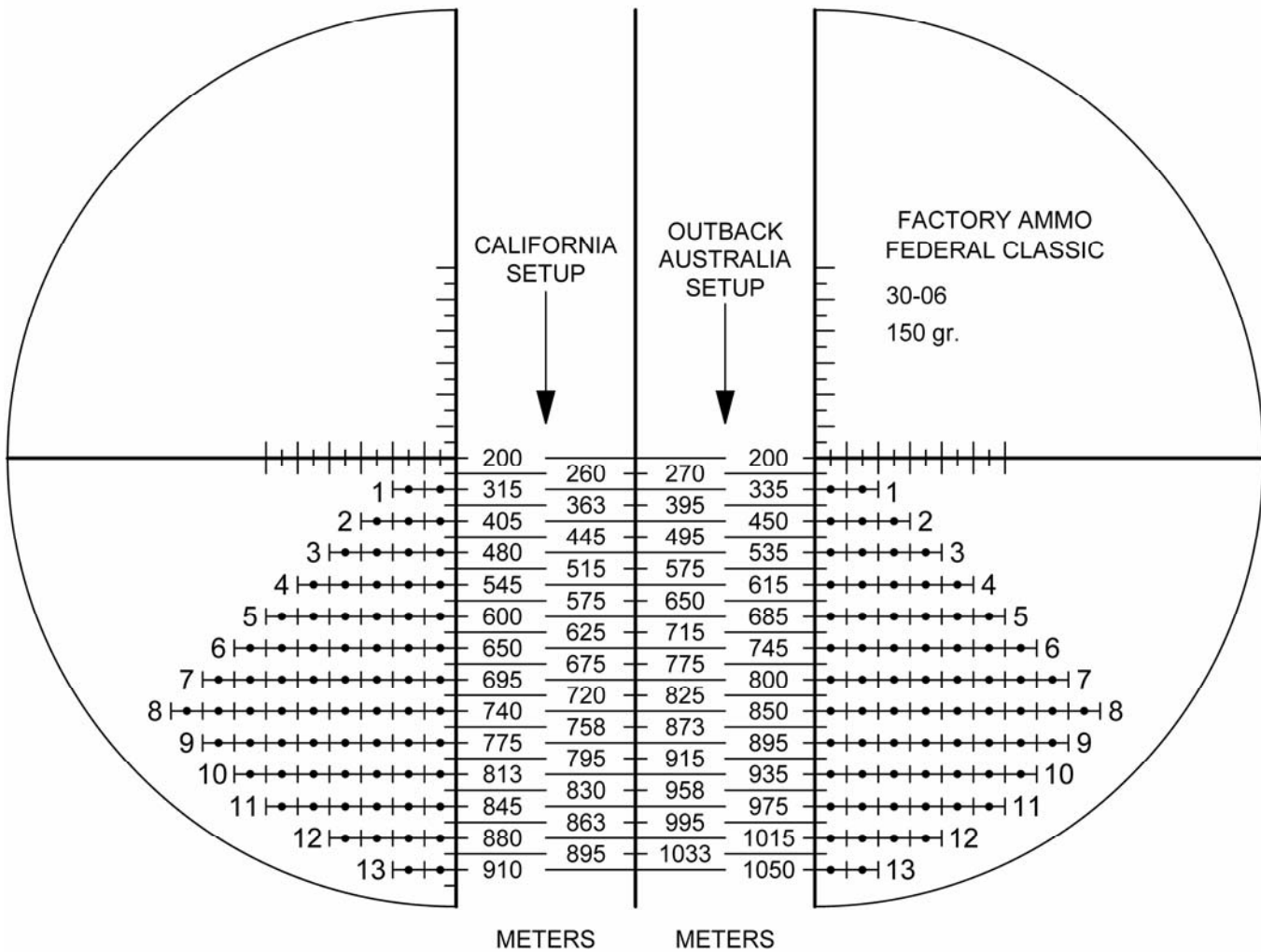
	Australia (Outback)	California (Home)
Temperature	102° F	55° F
Barometer	28.3	30.15
Relative Humidity	21%	81%
Altitude	1500 ft.	Sea Level
Chronograph 8 Shot Average	3102	2905

Note: Increased velocity experienced in the outback is probably more a function of temperature than other conditions.

COMPARISON OF ENVIRONMENTAL EFFECTS

Shown on the Horus Targeting Grid

MID - RANGE RETICLE



RANGE FINDER

To use this reticle with maximum precision, the rifleman must be able to make an accurate calculation of the distance to the target. With this reticle, he can do so using the built-in range finder. Depending on the Horus Reticle you selected, the range finder is located in the central cross hair or is incorporated in the lower left quadrant of that reticle.

Using the range finder is very easy. It features excellent optics, and the horizontal and vertical range finder bars are very precisely marked.

The rifleman uses the range finder to make a quick, accurate measurement of the distance to the target in yards or meters. The rifleman moves the target from the range finder to the main targeting grid without ever having to take his eye off the target.

This built-in range finder eliminates the need to carry another piece of range finding equipment – extra equipment to carry and to fumble with, equipment subject to breakdowns and low batteries. (Laser range finders have an additional disadvantage: They may reveal themselves to the target by an optical signature, with less than optimal consequences for the rifleman.)

You must know the size of the target in order to make the range finder work. If you guess or use the wrong size, your range determination will be inaccurate.

In reference to range calculation, there are probably numerous ways to compute the range once you know the MILS covered by the range finder. The following is one of the most common methods.

Standard Method for Military and Police

U.S.M.C. MIL-DOT

How to Calculate the Range

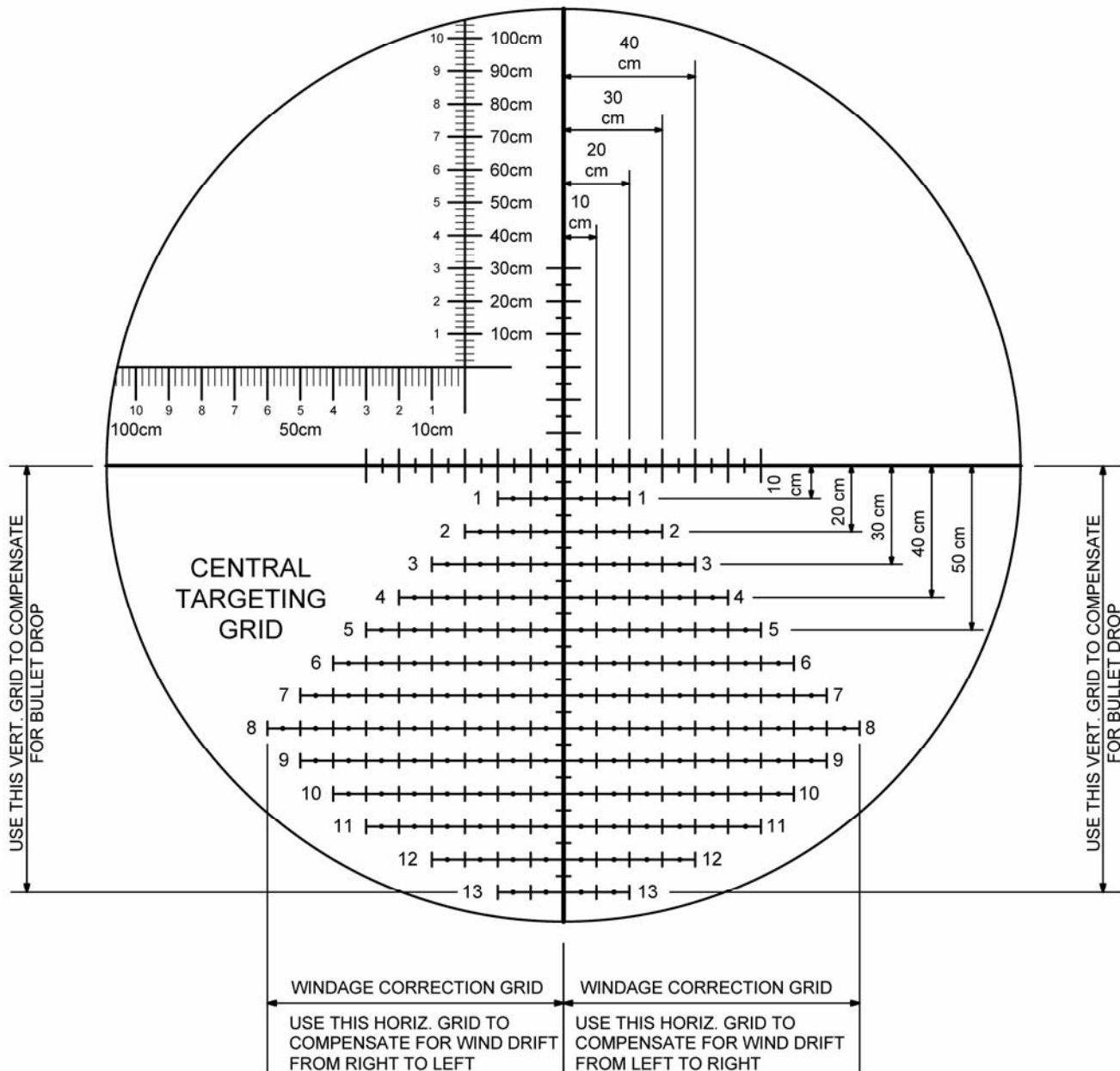
$$\text{Range (in yards)} = \frac{\text{Height of Target (in yards)} \times 1000}{\text{Height of Target (in Mils)}} \\ \text{(as seen in Range Finder)}$$

$$\text{Meters} = (\text{Yards}) (.9144 \text{ Conversion Factor})$$

For speed and simplicity, Horus Vision recommends the “MIL-DOT MASTER”, a simple slide rule that instantly converts MILS to distance.

GENERAL SPECIFICATIONS A METRIC OVERVIEW

MAIN TARGETING GRID



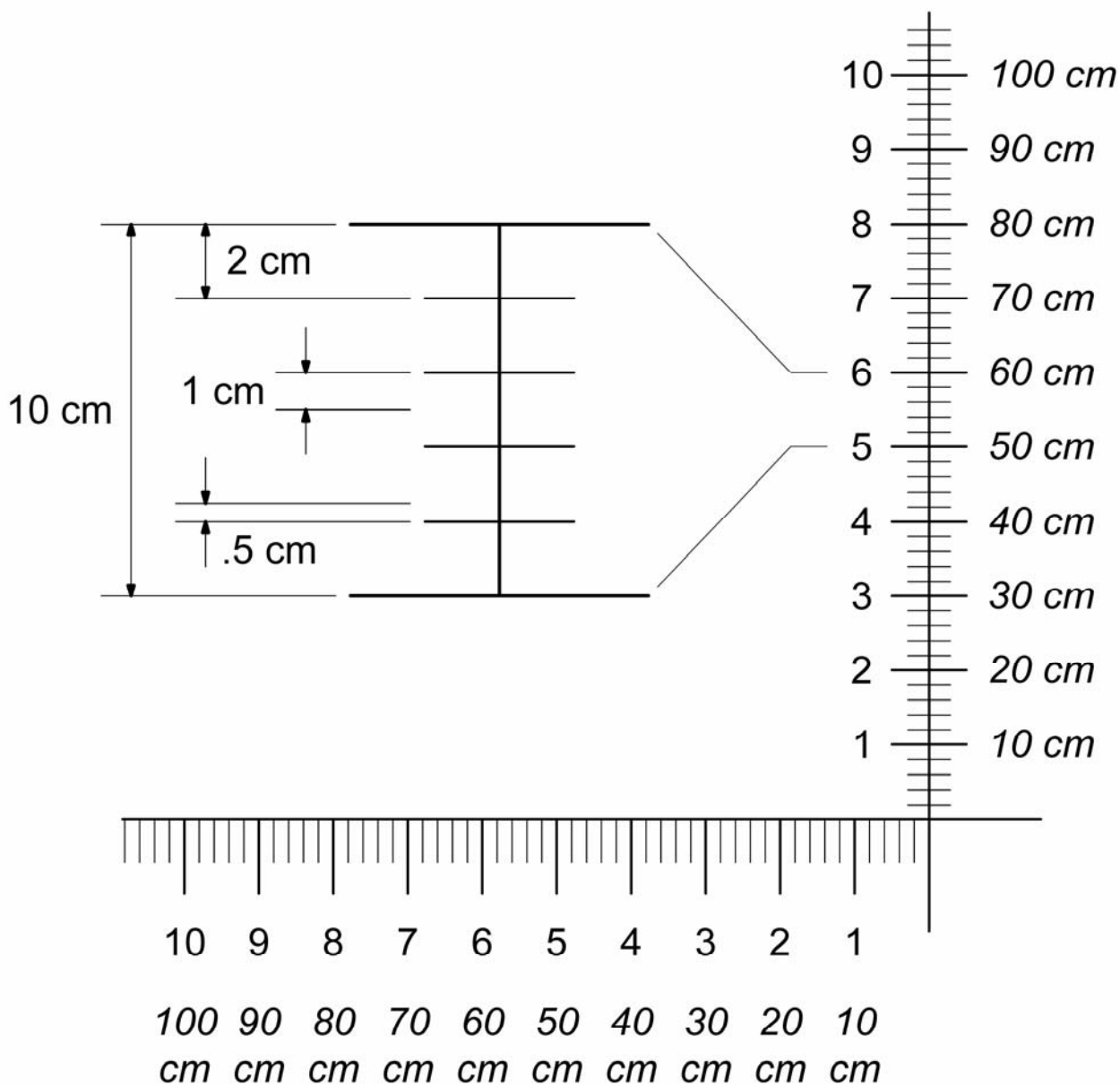
Calibrated in Universal Standard Metric (USMC) at exactly 100 meters.
Each horizontal elevation line subtends exactly 10 cm at exactly 100 meters

SPECIFICATIONS - RANGE FINDER A METRIC OVERVIEW

METRIC METHOD

(1 MIL = 10 cm AT EXACTLY 100 METERS)

Simply add a "0" (zero) to the Mil Number
and you have a centimeter scale



Metric Method

For hunters and shooters who were educated in the metric system and military units that employ the metric system.

$$\text{Range} = \frac{\text{Height of Target in Centimeters} \times 100}{\text{Height of Target in Range Finder (in centimeters)}}$$

a. Example:

A man is 183cm tall (approximately 6 feet).

Number of centimeters covered in range finder 20 cm.

$$\frac{183\text{cm} \times 100}{20\text{cm}} = 915 \text{ meters}$$

b. Example:

A man is 170 cm tall.

Number of centimeters covered in range finder 35 cm.

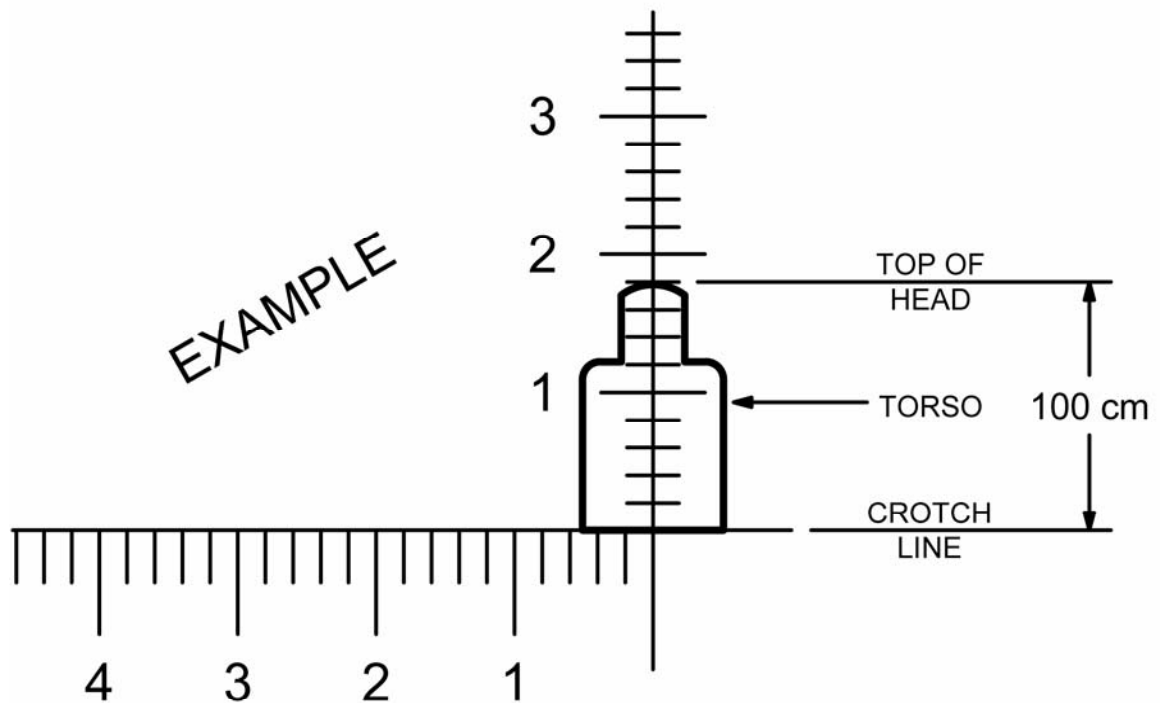
$$\frac{170\text{cm} \times 100}{35 \text{ cm}} = 485.7 \text{ meters}$$

RANGE FINDER

FOR

U.S.M.C. - MIL DOT

METRIC METHOD



$$\text{RANGE} = \frac{\text{HEIGHT OF TARGET IN CENTIMETERS} \times 100}{\text{HEIGHT OF TARGET IN RANGE FINDER (IN CENTIMETERS)}}$$

TARGET = 100 CENTIMETERS FROM HEAD TO CROTCH

$$\frac{(100 \text{ cm}) (100)}{18 \text{ CENTIMETERS}} = 555.56 \text{ METERS}$$

NOTE: "100" IS A CONSTANT
FOR THE METRIC METHOD

MILRADIANT OVERVIEW

RANGE FINDER - SPECIFICATIONS

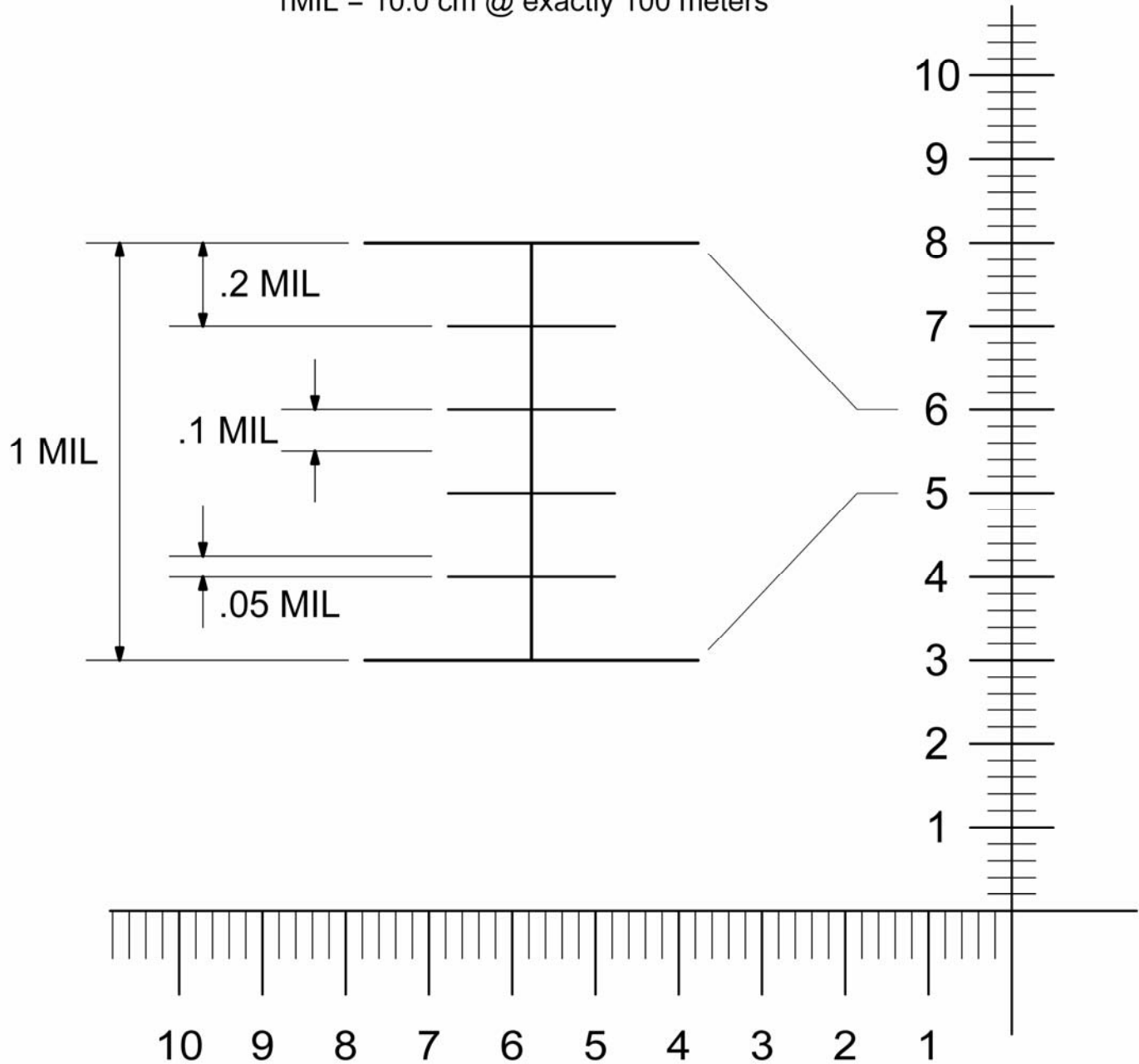
Horus Reticle formatted for Military and Police

Rangefinder Grid based on:

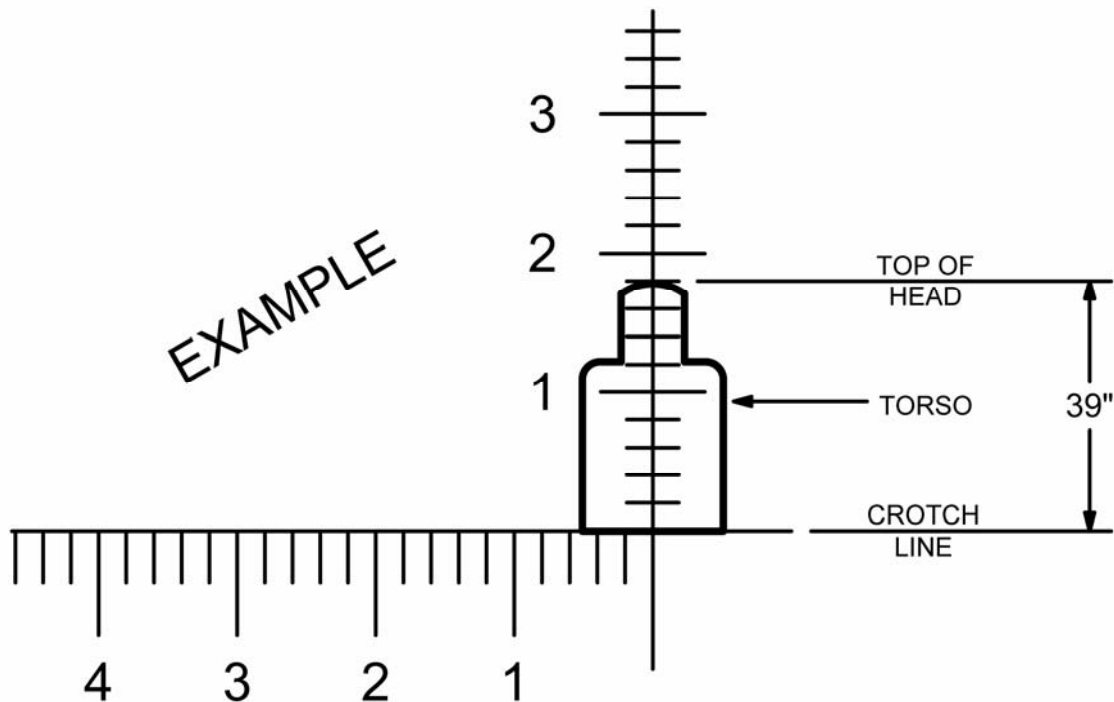
A circle = 6283 MILS

1MIL = 3.60 in @ exactly 100 yards

1MIL = 10.0 cm @ exactly 100 meters



RANGE FINDER for U.S.M.C.- MIL DOT



$$\text{RANGE} = \frac{\text{HEIGHT OF TARGET IN YARDS} \times 1000}{\text{HEIGHT OF TARGET IN RANGE FINDER (IN MILS)}}$$

TARGET = 39 INCHES FROM HEAD TO CROTCH
OR

$$39" / 36" = 1.08333 \text{ YARDS}$$

$$\frac{(1.08333 \text{ yds}) (1000)}{1.8 \text{ mils}} = 601.85 \text{ YARDS}$$

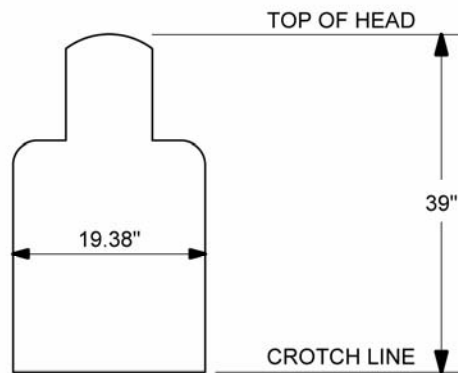
$$(601.85 \text{ yds}) (.9144) = 550.33 \text{ METERS}$$

NOTE: "1000" IS A CONSTANT
FOR U.S.M.C. MIL DOT

STANDARD MILITARY TARGET

As measured in rangefinder	Waist 19.38 inches	Head to Crotch 39 inches
MILS	Yards	Yards
.1	5,383.30	10,833.30
.2	2,691.70	5,416.60
.5	1,076.70	2,166.67
.75	717.80	1,444.44
1.00	538.30	1,083.33
1.25	430.70	866.67
1.50	358.89	722.22
1.75	307.60	619.05
2.00	269.17	541.67
2.25	239.30	481.48
2.50	215.33	433.33
2.75	195.76	393.94
3.00	179.40	361.11
3.25	165.60	333.33
3.50	153.81	309.52
3.75	143.56	288.89
4.00	134.58	270.83
4.25	126.67	254.90
4.50	119.63	240.74
4.75	113.33	228.07
5.00	107.67	216.67
5.50	97.88	196.97
6.00	89.70	180.55
6.50	82.82	166.67
7.00	76.90	154.76
8.00	67.29	135.42
9.00	59.81	120.37

U.S.M.C. MIL DOT



MILITARY TORSO TARGET

- a) Paper
- b) Plastic for Auto target

$$\text{RANGE} = \frac{\text{HEIGHT OF TARGET IN YARDS} \times 1000}{\text{HEIGHT OF TARGET IN RANGE FINDER (IN MILS)}}$$

EXAMPLE - 1

Head to Torso Measures 3.5 MILS in the Rangefinder

$$39" / 36" = 1.08333 \text{ YARDS}$$

$$\text{RANGE} = \frac{(1.08333 \text{ yds}) (1000)}{3.5 \text{ mils}} = 309.52 \text{ YARDS}$$

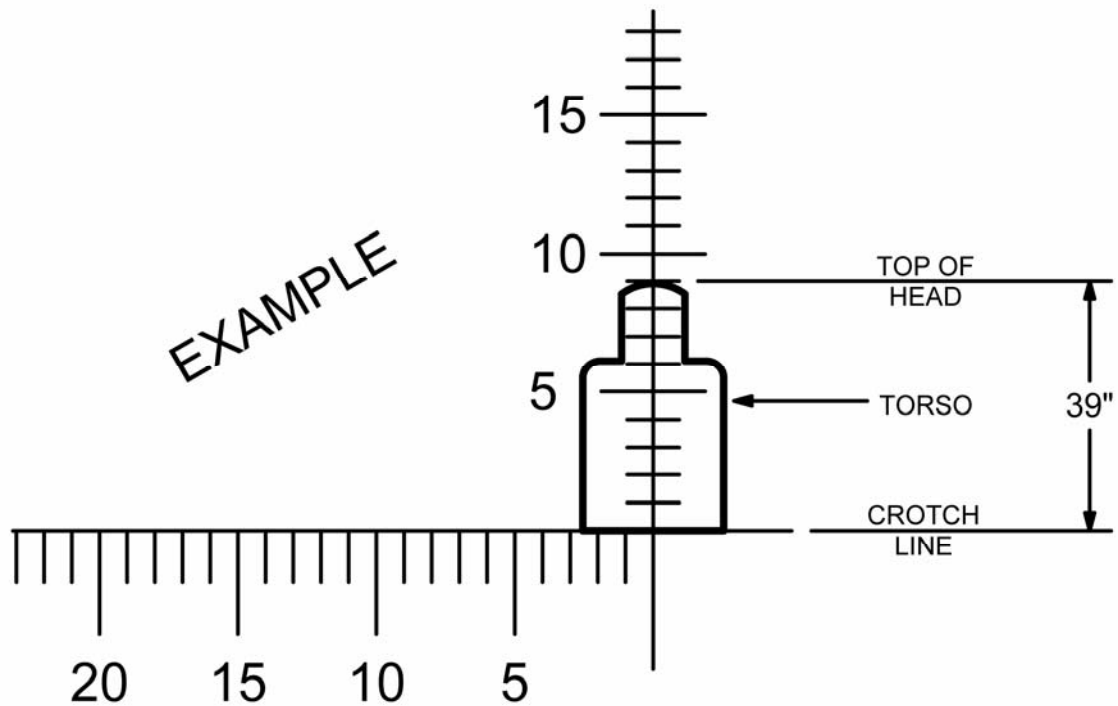
EXAMPLE - 2

Waist Measures 6 MILS in the Rangefinder

$$19.38" / 36" = .53833 \text{ YARDS}$$

$$\text{RANGE} = \frac{(.53833 \text{ yds}) (1000)}{6 \text{ mils}} = 89.70 \text{ YARDS}$$

RANGE FINDER - ENGLISH METHOD



$$\text{RANGE} = \frac{\text{HEIGHT OF TARGET IN INCHES} \times 100}{\text{HEIGHT OF TARGET IN RANGE FINDER}}$$

TARGET = 39 INCHES FROM HEAD TO CROTCH

$$\frac{39 \times 100}{9} = 433 \text{ YARDS}$$

NOTE: "100" IS A CONSTANT
FOR ENGLISH METHOD

WINDAGE

The long-range shooter usually encounters bullet drift to the right or left of the optical central path the bullet is supposed to follow. Factors causing horizontal windage problems can occur in combination thereby making correction difficult or they may cancel each other out. The following is a partial list of factors causing windage problems:

1. Wind blowing in one direction.
2. A combination of winds blowing in various directions.
3. Bullet design (aerodynamics factors acting on a fast moving projectile).
4. Magnus effect: a lateral thrust exerted by wind on a rotating cylinder whose axis is perpendicular to the wind direction (from Webster Dictionary).
5. Idiosyncrasies of the rifle and even the bullets including imperfection in the rifle and/or bullet.
6. Coriolis Force. A force which deflects the wind, airplanes, projectiles, etc., from their straight-line course to the left in the Southern Hemisphere and to the right in the Northern Hemisphere.

Trial and Error Method

- . Example: You are shooting at a long-range target, using Line 5 for the drop compensation. After firing, the elevation appears to be correct, but the bullet has drifted approximately two vertical hackmarks to the right of the center.
- . With the horizontal windage line 5 as a reference, simply move the rifle to the right approximately one hackmark, shoot again, and walk the bullet into the target (i.e. continue to correct and shoot until you are on target).

Second-Shot Correction Method – A Very Fast, Non-Mathematical Method

- . Using the example above, correct for the next shot by using the bullet's point of impact as it appears on the reticle's grid as your targeting crosshair. The intersection of horizontal Line 5 and the second vertical hackmark to the right side of the main vertical crosshair becomes the targeting crosshair.

See Section -----Second Shot Correction

WIND

The Horus Reticle has a uniform targeting grid that allows TRAG1S5 and ATRAG target aiming programs to calculate and give the targeting grid plot points for the effects of wind at various ranges. We recommend the TRAG1S5 aiming program calculate the effects of a steady 90 degree (full-value) crosswind at 10 mph. For 20 mph wind, simply double the value of the grid plot points at 10 mph. If the wind is blowing at 15 mph, simply use a multiply of 1.5. For half value winds, divide by the appropriate number. E.G. a 10 MPH half value wind would equate to a 5 MPH full value wind.

Use the method that best suits your needs to “read” wind, but remember that at extended ranges, wind effects are multiplied.

WIND VALUES

A Graphic View of the Linear Relationship

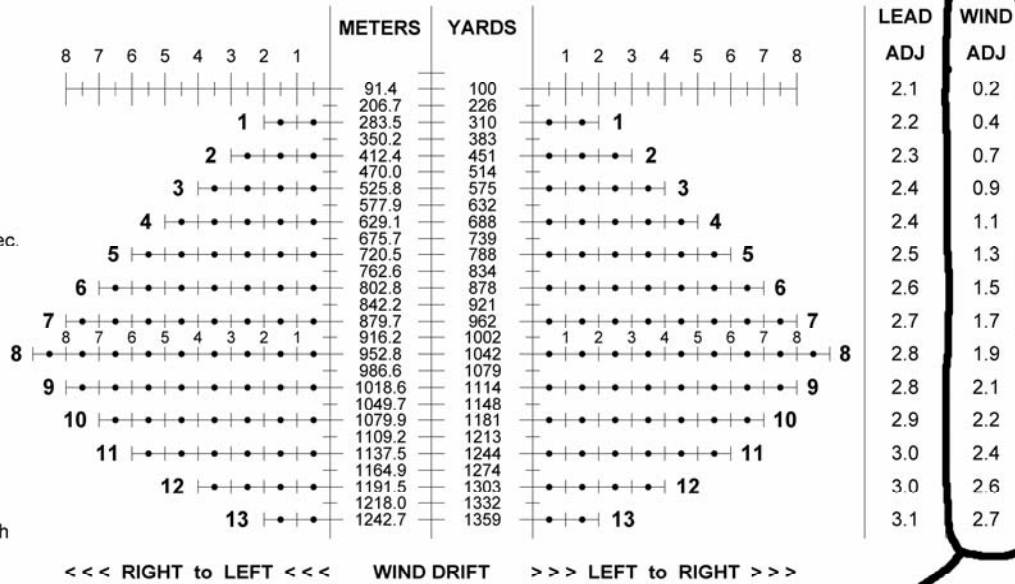
Example:
My Rifle - May 2000
N.T. Australia

HORUS RETICLE

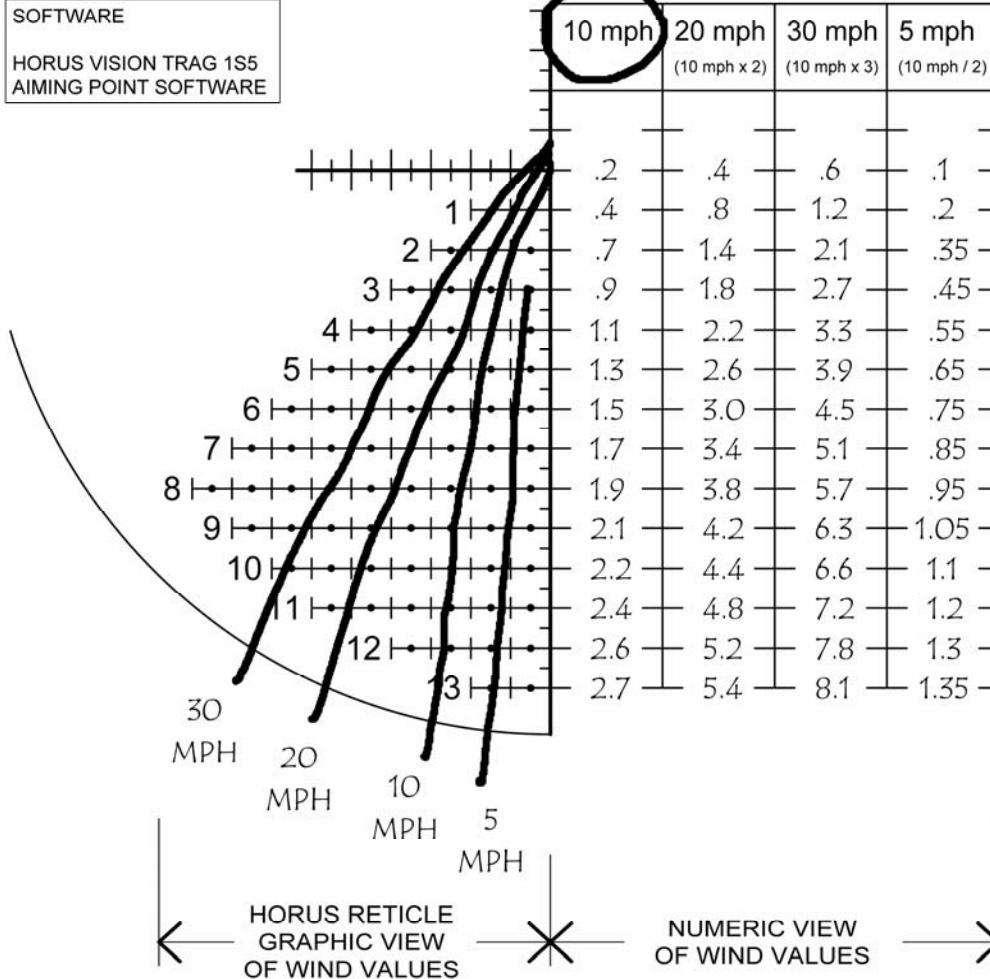
300 WIN MAG

Bullet Wt. 190 grains
Scope Ht. 1.9 inches
Bal. Coef. 0.533
Muz. Vel. 2844.93 ft/sec.
ZERO 100 yards

RH = 78
BP = 27.83
Altitude 1500 feet
Temperature 95 F
Effective Xwind 10 mph



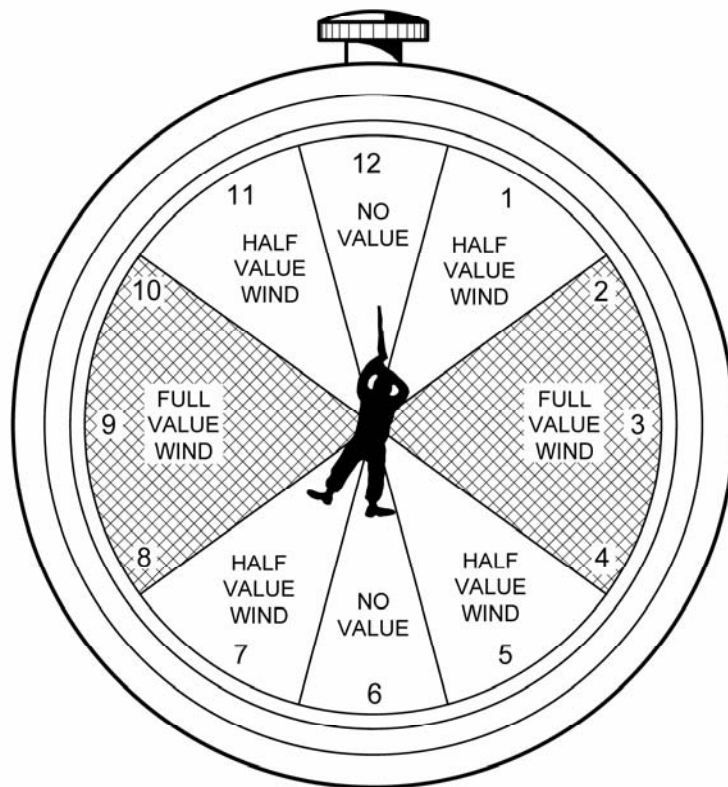
SOFTWARE
HORUS VISION TRAG 1S5
AIMING POINT SOFTWARE



Using the "Clock" System

Most Riflemen use the "clock" system to factor in wind direction when they set up for a shot. (See Diagram). The Horus Reticle is very easy to use with the clock system. No math is required.

You have already figured out the plot points - the hackmarks (and fractions of hackmarks) from the main verticle crosshair - for a "full-value", or 90 degree wind of 10, 20 or 30 mph. If the wind is from a "half-value" direction, simply cut the adjustment in half. In other words, if a plot point is two hackmarks to the left for a full-value wind, move only one hackmark to the left for a wind of the same strength but blowing from a "half-value" direction, just use the plotted line for a 10-mph wind.



Clock System
Courtesy of U.S. Army

LEADING A MOVING TARGET

(Plotting Bullet and Target Intercept Points)

LEADING A MOVING TARGET

LEAD

When the target is moving, the rifleman must aim ahead of the target. The Theoretical Lead is a specific intercept point where the fired bullet will meet the moving target.

The ATRAG Aiming Point Software program in combination with the Horus Reticle allows the rifleman to easily and accurately plot the theoretical leads. All calculations and plot points are based on targets moving 90 degrees to the rifleman's position.

The Horus Reticle's uniform targeting grid allows ATRAG Aiming Point Software to calculate and give the targeting grid plot points for theoretical leads at various ranges. For the most useful information, have ATRAG aiming program calculate the lead of a target moving 4 mph. For an 8 mph moving target, simply double the value of the grid plot points.

Note: The actual lead required also depends upon some factors that are determined by the actions of the shooter in firing the shot, and therefore cannot be predicted. These include the particular shooter's human "reaction time" (time between the instant he decides to pull the trigger and the instant that the trigger is actually pulled), and also the "lock time" (time between sear release and firing-pin impact on the primer) of the particular rifle and the "action time" (time between firing-pin impact on the primer and exit of the bullet from the muzzle) of the load. The errors introduced by these unpredictable variables are minimized if the shooter uses the "sustained lead" technique of shooting at moving targets, and maintains a consistent "follow through"; the errors are maximized if the shooter attempts to "spot shoot" the target by taking aim at a fixed point ahead of the target and then pulling the trigger. *

* Commentary written by William Davis

TARGET LEADS

A Graphic View of the Linear Relationship

Example:
My Rifle - May 2000
N.T. Australia

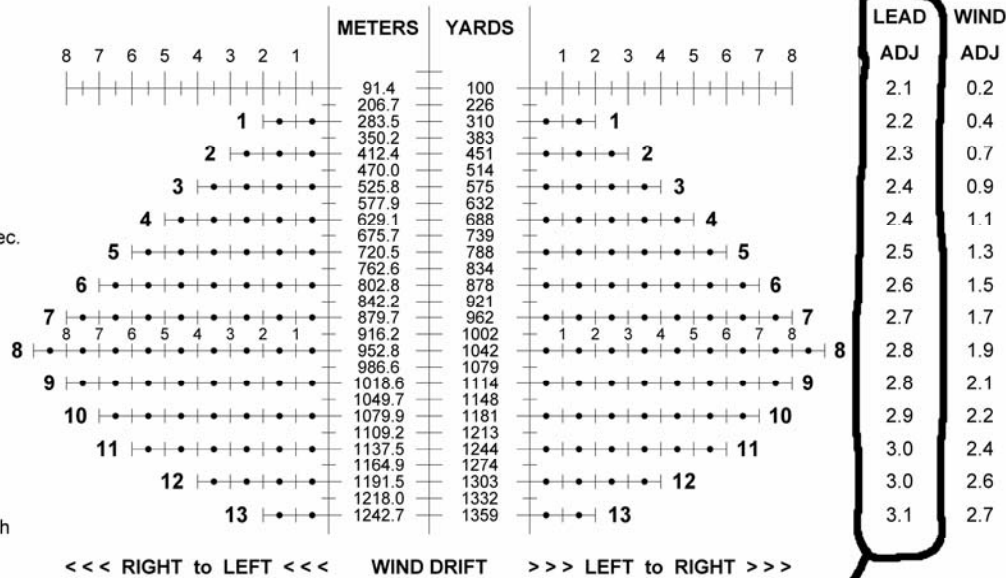
HORUS RETICLE

[USMC mils]

300 WIN MAG

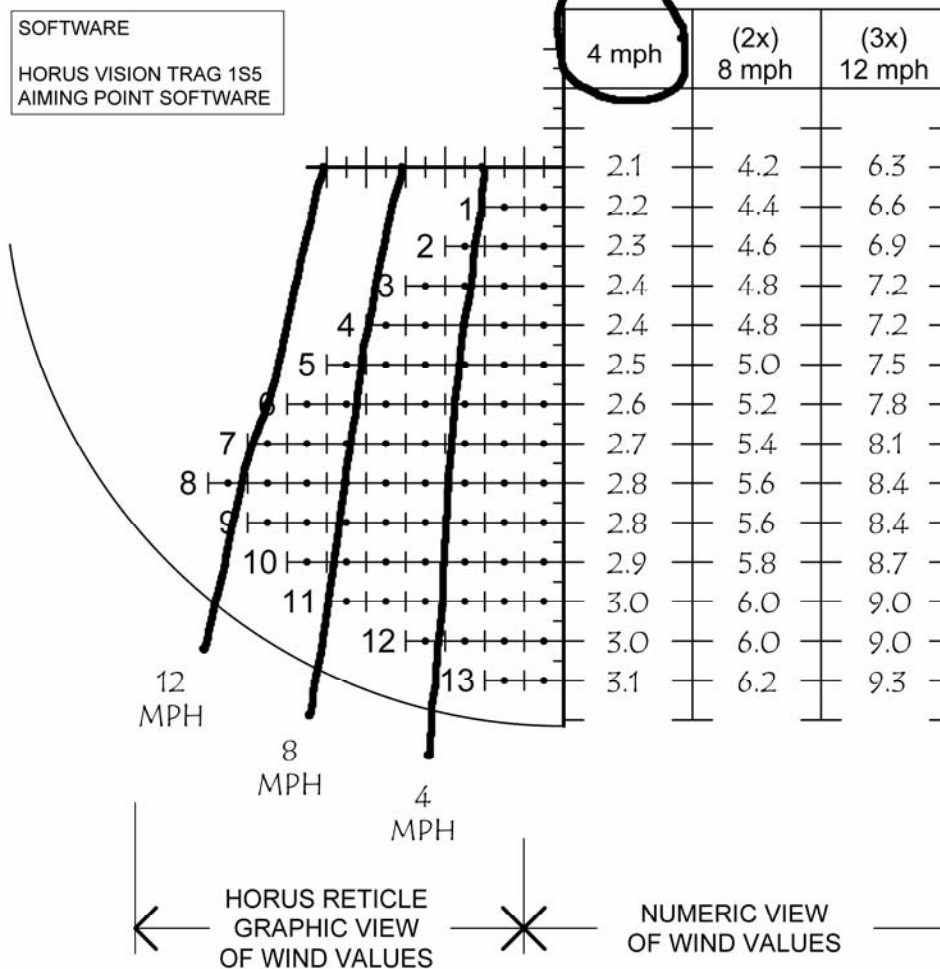
Bullet Wt. 190 grains
Scope Ht. 1.9 inches
Bal. Coef. 0.533
Muz. Vel. 2844.93 ft/sec.
ZERO 100 yards

RH = 78
BP = 27.83
Altitude 1500 feet
Temperature 95 F
Effective Xwind 10 mph

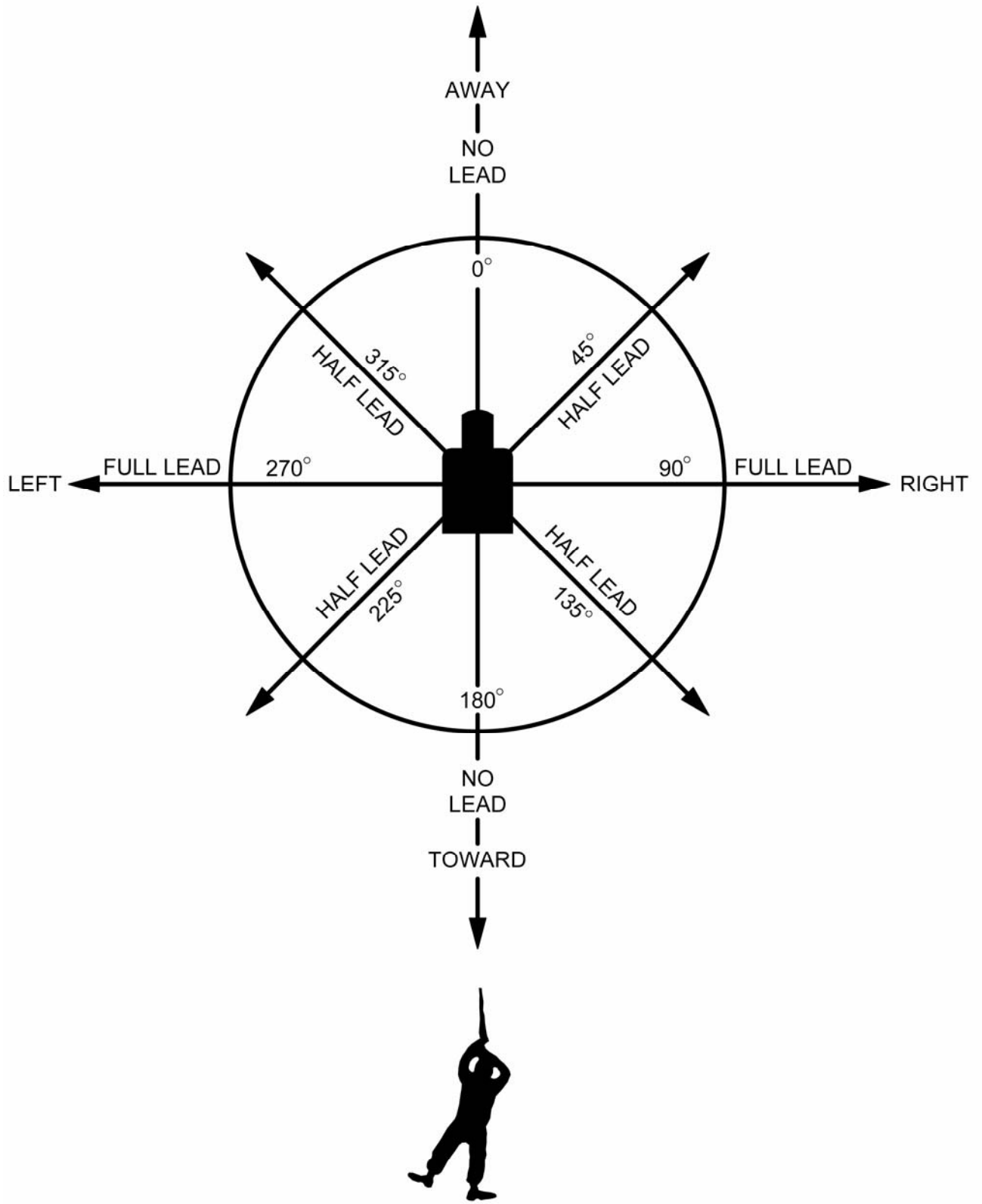


SOFTWARE

HORUS VISION TRAG 1S5
AIMING POINT SOFTWARE



MOVING TARGET



Second-Shot Correction

The Horus Reticle features a unique method for rapidly correcting your aim on your second shot – without taking your eye off the target or the rifle from your shoulder.

If you miss your first shot, due to misjudging windage or range or other factors, you can use the custom reticle's ingeniously marked grid lines for second-shot correction to get off a quick second shot and put the bullet on target.

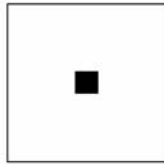
Second-shot correction allows you to make a rapid, very accurate second shot without any calculations and without fiddling with any windage or elevation knobs.

- ◇ On your second shot, you will repeat your first shot exactly in reference to your shooting position, sight picture, and trigger control. The only difference will be the point of targeting on the reticle.
- ◇ After your first shot you must remember
 - exactly what elevation marker line you employed.
 - exactly where you held your target, and
 - precisely where the first bullet impacted in relation to your target.
- ◇ Look through the scope, put the crosshairs exactly where you originally aimed, then **note exactly where the bullet impacted in reference to the grid. That point of impact on the grid becomes your new targeting point** for a quick and accurate second shot.
- ◇ *Example:* You are shooting at a long-range target, using dead center of Line 8 on the custom reticle for the drop compensation. After firing and missing the bullseye, note where bullet impacted on the target. Now look through your scope. Put dead center of Line 8 on your target. Without moving off the target, **note on the grid where the bullet struck.**
 - Say the bullet struck on Line 7 – 2 hackmarks to the right of center.
 - Line 7, 2 hackmarks to the right is your new aiming point (crosshair).
 - Place your target on Line 7 – 2 hackmarks to the right. Squeeze the trigger.

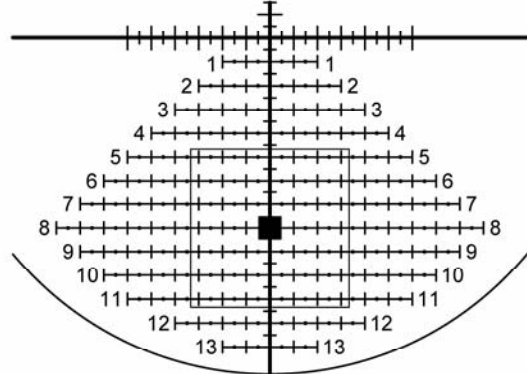
If you followed these instructions, you should hit the target. With a little practice, you will do it quickly and almost without a thought.

2ND SHOT CORRECTION

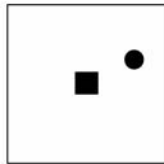
① Target



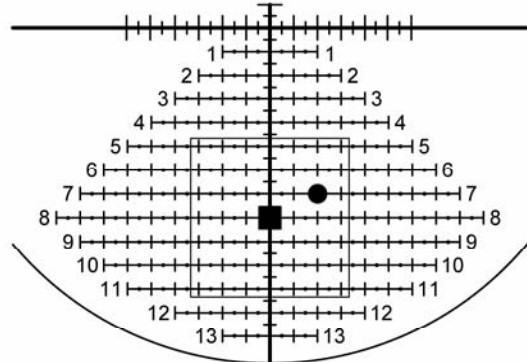
② Range calls for using line #8 for drop compensation- put target on line #8 and shoot.



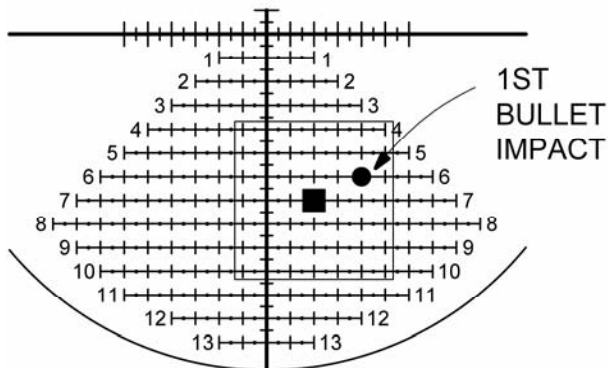
③ Bullet misses bullseye - Impact is high and to the right.



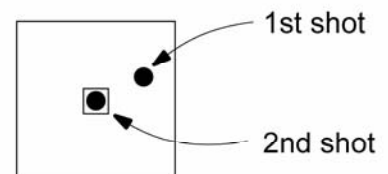
④ Look through rifle scope and put bullseye on original aiming point (central crosshair of line #8). Note: bullet impact, line 7, 2 hackmarks right.



⑤ Now use line #7, 2 hackmarks to the right as your main targeting crosshairs.



⑥ If you did everything properly, you should have a bullseye.



Second-Shot Correction™

A “HORUS” FIRST - A UNIQUE INNOVATION THAT GIVES THE OPERATOR USING A HORUS SCOPE/ RETICLE THE TACTICAL EDGE

1st Scenario: You miss your first shot. Horus allows you to accurately correct the second shot. See the procedure on the previous page.

2nd Scenario: Two operators using identical rifles equipped with a Horus Scope/ Reticle are engaging an unfriendly target at 1000 yards. Both operators have determined range and are holding on line #8. Operator #1 fires and misses. Operator #2 notes the impact of the fired shot on his reticle as line #7, 2 hackmarks to the right. Operator #2 makes the correction by holding on line #7 and 2 hackmarks to the right. The unfriendly is eliminated before it can react to the first shot.

3rd Scenario: A sniper is shooting from the 7th floor window of an old brick building. People and cops are being shot. Urgency is required. You, the operator, arrive on the scene. You select a point (such as an odd colored brick) on the building in very close proximity to the target. Fire the 1st shot and note the impact point on your Horus Reticle Grid. That is your corrected aim point to dispatch the sniper (target). This tactical use of the “2nd Shot Correction”™ corrects for range, wind, angle of fire and environmental conditions; and neutralizes the target with just two rounds.

4th Scenario: On the battlefield, you are engaging numerous combatants. You run out of your custom match ammo and start using any ammo you can find. There is no need to re-zero. Fire a few shots and take note of the point of impact on the Horus Targeting Grid. That is your new zero.

BRACKET/ SNAP SHOOTING

When time and conditions do not allow the rifleman the opportunity to properly determine the range of a target, the Horus Reticle increases the probability of a first round Snap Shot hit by complimenting the trained rifleman's visual estimate of range to target. The Horus Reticle simply allows the rifleman to bracket the target so the bullet will strike the target at a variety of ranges.

Through practice you can master snap shooting employing the Horus Reticle out to a range of 600 yards (549 meters) or more depending on your skills, type of weapon and cartridge employed.

Once estimating distance and the Horus Reticle is mastered, you can learn to use the Horus Reticle to bracket wind deflection and/or target lead.

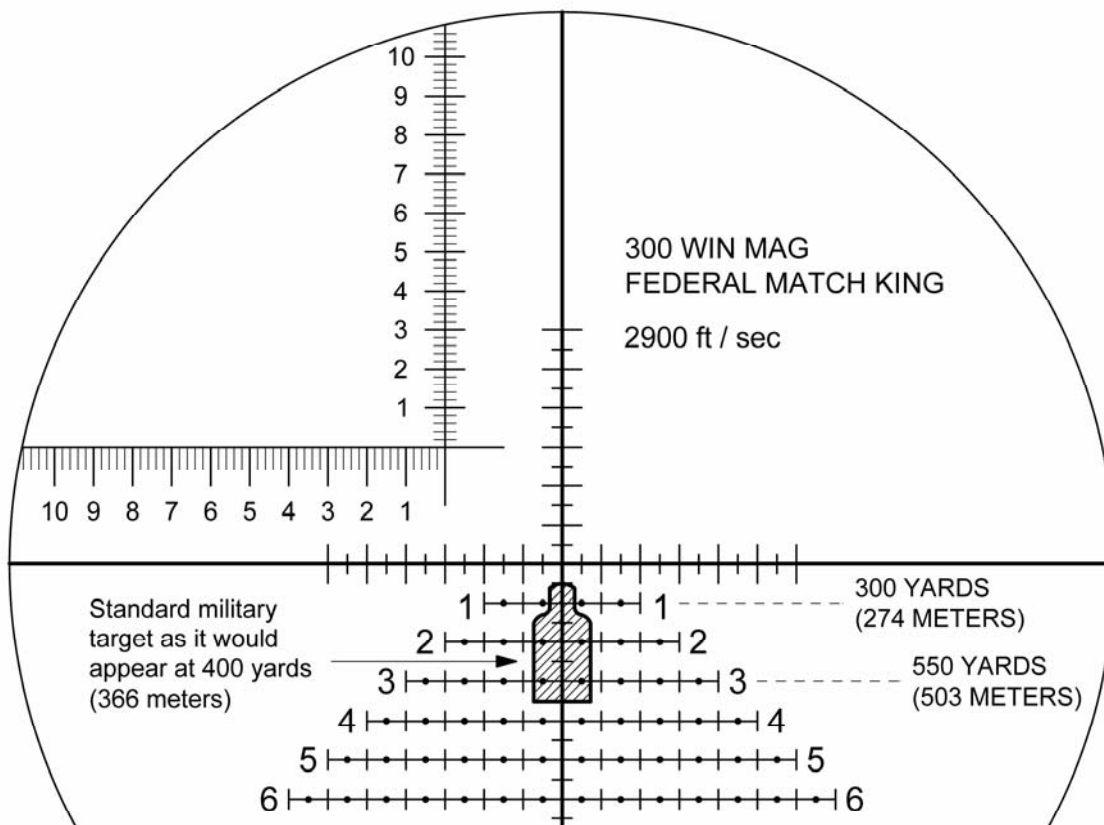
The following illustrations will get you started. Please, remember computer projections are great. However, in this type of quick shooting, there is absolutely no substitute for practice, practice, practice...

BRACKET SNAP SHOOTING

AT ESTIMATED RANGE

EXAMPLE : Your Rifle is a 300 WIN MAG

1. YOU ESTIMATE THE TARGET RANGE BETWEEN 300 TO 550 YARDS - NO WIND (274 TO 503 METERS).
2. PLACE BOTTOM OF TARGET ON MAIN TARGETING GRID AT LINE 3.5 (3.5 MILS), WHICH IS 600 YARDS OR 549 METERS.
3. IF YOU DID EVERYTHING CORRECT, YOU WILL HIT THE TARGET.



HORUS RETICLE

[USMC mils]

300 WIN MAG

Bullet Wt. 190 grains
Scope Ht. 1.9 inches
Bal. Coef. 0.533
Muz. Vel. 2900 ft/sec.
ZERO 100 yards

	METERS	YARDS
8	91.4	100
7	201.2	220
6	273.4	299
5	337.4	369
4	395.0	432
3	449.9	492
2	502.0	549
1	550.5	602
	597.1	653
	640.1	700
	681.2	745
	719.6	787
	757.1	828
	792.8	867
	827.5	905
	861.4	942
	893.4	977

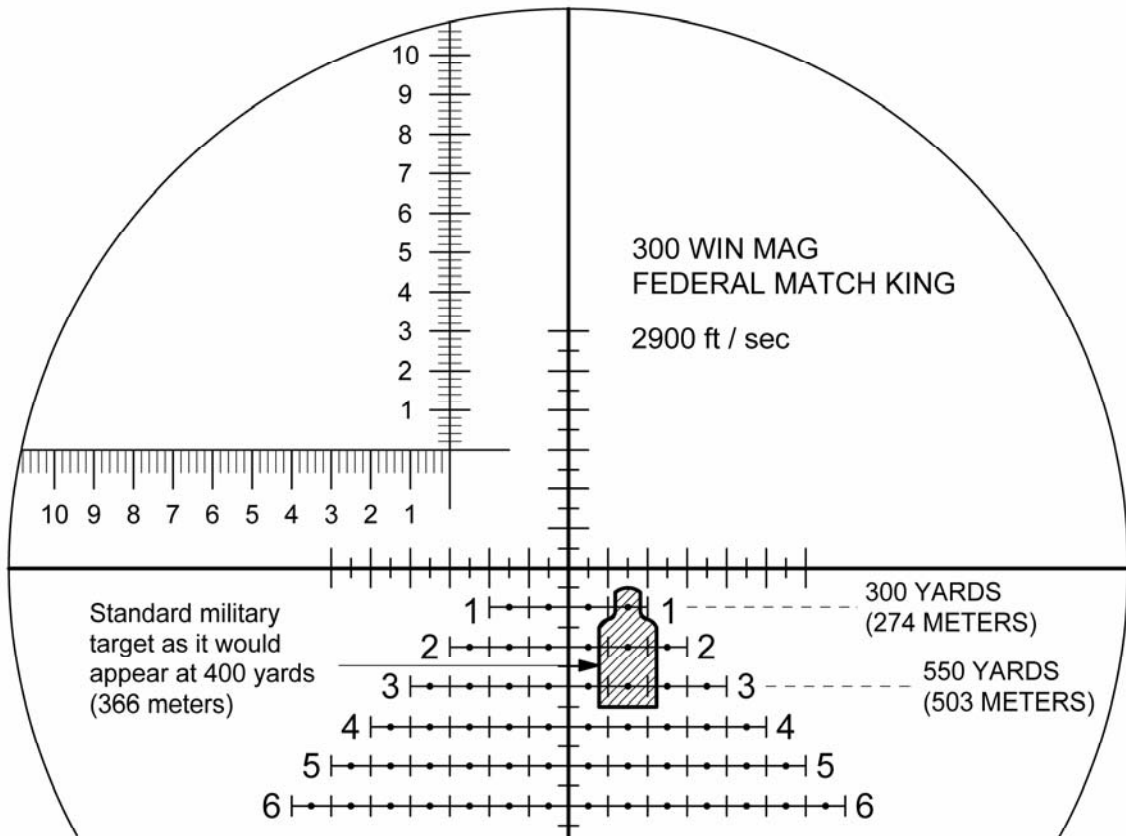
LEAD	WIND
ADJ	ADJ
2.1	0.2
2.2	0.5
2.3	0.8
2.4	1.0
2.5	1.2
2.6	1.5
2.7	1.7
2.8	1.9
2.9	2.1

BRACKET SNAP SHOOTING

AT ESTIMATED RANGE & WINDAGE

EXAMPLE : Your Rifle is a 300 WIN MAG

1. YOU ESTIMATE THE TARGET RANGE BETWEEN 300 TO 550 YARDS (274 TO 503 METERS) & THE WIND AT 15 TO 25 MPH LEFT TO RIGHT.
2. PLACE BOTTOM OF TARGET ON MAIN TARGETING GRID AT LINE 3.5 (3.5 MILS) WHICH IS 600 YARDS OR 549 METERS.
3. OFF-SET THE TARGET TO THE RIGHT SIDE OF THE GRID FOR WIND DEFLECTION. IF YOU DID EVERYTHING CORRECT, YOU WILL HIT THE TARGET.



HORUS RETICLE

[USMC mils]

300 WIN MAG

Bullet Wt. 190 grains
Scope Ht. 1.9 inches
Bal. Coef. 0.533
Muz. Vel. 2900 ft/sec.
ZERO 100 yards

	METERS	YARDS	
8	893.4	977	8
7	861.4	942	7
6	827.5	905	6
5	792.8	867	5
4	757.1	828	4
3	719.6	787	3
2	681.2	745	2
1	640.1	700	1
	597.1	653	
	550.5	602	
	502.0	549	
	449.9	492	
	395.0	432	
	337.4	369	
	273.4	299	
	201.2	220	
	91.4	100	

LEAD	WIND
ADJ	ADJ
2.1	0.2
2.2	0.5
2.3	0.8
2.4	1.0
2.5	1.2
2.6	1.5
2.7	1.7
2.8	1.9
2.9	2.1

USING THE HORUS SIGHTING SYSTEM® TO INTERCHANGEABLY SHOOT SUPERSONIC AND SUBSONIC AMMUNITION ON A RIFLE EQUIPED WITH A SUPPRESSOR:

The Horus Sighting System® gives the precision tactical rifleman the ability to rapidly switch between subsonic and supersonic ammunition without compromising accuracy with either cartridge and without making any adjustments to the scope. Both types of ammunition can be expected to be used tactically in real world scenarios because dynamic entries by SWAT or Tac Teams frequently demand silently neutralizing guard dogs, geese, or eliminating a street or security light. These potential threats to a stealthy approach by the entry team must silently be neutralized by a precision marksmen using subsonic ammunition in a suppressed rifle. Once these threats are neutralized, precision marksmen must shift to ballistically superior supersonic ammunition to provide cover for the entry team. The Horus Sighting System® gives precision tactical marksmen the ability to interchangeably use both types of ammunition with absolute confidence and repeatable accuracy without making any physical adjustments whatsoever to the scope. The ability of the Horus Sighting System® to instantly and accurately engage targets with both supersonic and subsonic ammunition without adjustment has been proven operationally time after time by military and law enforcement precision marksmen on actual dynamic entry missions.

Make sure your rifle is in good operating condition. If you are unsure, have it checked by a competent gunsmith. Most sound suppressors should be permanently attached to your rifle when shooting any and all types of ammo, because removing the suppressor will change the point of impact of your zero. If you intend to remove and replace the suppressor, you must zero both with and without it in place, confirming zero in both modes. Most precision tactical marksmen leave their suppressors in place except when cleaning their rifles. It is highly recommended to keep the sound suppressor attached if you intend to shoot both supersonic and subsonic ammunition on a regular basis. The exception to this is with the use of SureFire suppressors. These suppressors have minimal to no impact shift and repeat perfectly with removal and reattachment.

The first step in establishing zero with both types of ammunition is to zero your rifle with your preferred supersonic ammunition, (e.g. Black Hill 175gr match 308 Winchester). Horus Vision highly recommends using a 100 meter or 100 yard range to establish zero. Bore sight the rifle and zero it with supersonic ammunition using the main central horizontal and vertical crosshairs.

Confirm the precise distance from the rifle to the target with a steel tape, if possible. You should also take this opportunity to obtain accurate chronograph data for your rifle, as this is used in the Horus Vision® ATRAG™ PDA Computer's ballistics program and accurate data inputs are critical to establishing proper come up data.

Using your PDA, calculate a come up card that reflects your ambient weather conditions. Write out the come up card using 25 or 50 meter or yard increments. You should always verify the validity of your computer generated come up card data by live fire at targets of known distances. It is best to attach this card to the side of your rifle stock, left side if you are right handed, right side if you are left handed. Put a bold red line across the top of the card. With a felt tip marking pen, color the primer end of each cartridge entirely red. This essential step will help eliminate confusion under stress as to which cartridge you are using. You are now set up to shoot your standard supersonic ammo. From this point on, **DO NOT TOUCH YOUR ELEVATION AND WINDAGE KNOBS**. Many Horus Vision Sighting System users actually tape their knobs with electrical or "100 MPH Tape" to ensure that they do not move. All adjustment for other types of ammunition will be made using the Horus Sighting System's targeting grid.

The next step is to zero the same suppressor-equipped rifle with subsonic ammunition. Again use the same 100 yard or meter distance as with your supersonic ammunition. Load your rifle with the subsonic ammo that you intend to use tactically. Using the central horizontal and vertical crosshair intersection you established for you supersonic ammunition zero, fire three shots. Look carefully through your scope at full power. Put the main crosshairs on the bulls eye you were shooting at. Keeping the main crosshair on the bull; carefully note the strike of the subsonic bullets on the Horus Grid. (They should all be in a tight group. If they are not in a tight group repeat the above procedure). Subsonic bullet Impact is usually on or around Line 4, a +/- drop of Line 4 is the exact point of impact approximately four mils. For this example, we will assume that Line 4 is your 100 yard or meter zero using subsonic ammunition.

You must also obtain accurate chronograph data for your subsonic ammo. Once this is accomplished and the data recorded on your PDA, use the PDA to calculate a come up card that reflects your ambient weather conditions. Prepare the come up card for the subsonic ammunition just as before, but this time using 25 meter or yard increments. Attach this card to the side of your rifle stock as before. Put a bold line of another color, for example black, across the top of the card. With a felt tip marking pen, color the primer end of all subsonic cartridges entirely black, or whatever other color you have decided to use. This will help eliminate confusion as to which cartridge you are using. Or, you can leave one cartridge plain and the other colored – whatever it takes to ensure that you don't load the wrong ammo by mistake.

Examples:

Info: <i>SUBSONIC</i> 180 gr <i>wind= 10 mph</i> <i>BC=.241</i> <i>Mu=975/ sec</i> <i>3.00 O'clock</i>			
Distance	Elev	Wind	Lead
<i>Yards</i>			
<i>25</i>	<i>1.0</i>	<i>0.18</i>	
<i>50</i>	<i>1.5</i>	<i>0.33</i>	
<i>75</i>	<i>2.5</i>	<i>0.46</i>	
<i>100</i>	<i>3.5</i>	<i>0.59</i>	
<i>125</i>	<i>4.8</i>	<i>0.72</i>	
<i>150</i>	<i>6.8</i>	<i>0.84</i>	
<i>175</i>	<i>7.6</i>	<i>0.98</i>	
<i>200</i>	<i>9.1</i>	<i>1.11</i>	
<i>225</i>	<i>10.6</i>	<i>1.25</i>	
<i>250</i>	<i>12.2</i>	<i>1.38</i>	
<i>300</i>	<i>15.38</i>	<i>1.64</i>	
Unleash the power of ANY Scope WWW.HORUSVISION.COM 650-583-5471			

Info: <i>SUPERSONIC</i> 175 gr <i>Blackhill MATCH</i> <i>wind= 10 mph</i> <i>Temp= 59</i> <i>Mu=2610</i> <i>3.00 O'clock</i>			
Distance	Elev	Wind	Lead
<i>50 Yards</i>	<i>0.13</i>	<i>0.07</i>	
<i>100</i>	<i>0</i>	<i>0.18</i>	
<i>150</i>	<i>0.23</i>	<i>0.29</i>	
<i>200</i>	<i>0.57</i>	<i>0.41</i>	
<i>250</i>	<i>0.96</i>	<i>0.53</i>	
<i>300</i>	<i>1.40</i>	<i>0.65</i>	
<i>350</i>	<i>1.86</i>	<i>0.76</i>	
<i>400</i>	<i>2.35</i>	<i>0.88</i>	
<i>450</i>	<i>2.87</i>	<i>1.01</i>	
<i>500</i>	<i>3.44</i>	<i>1.15</i>	
<i>550</i>	<i>4.05</i>	<i>1.30</i>	
<i>600</i>	<i>4.69</i>	<i>1.46</i>	
<i>650</i>	<i>5.37</i>	<i>1.61</i>	
<i>700</i>	<i>6.07</i>	<i>1.76</i>	
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WITH SUBSONIC AMMUNITION, YOU MUST VERIFY BY ACTUAL LIVE FIRE ALL POINTS ON YOUR COME UP CARD. In most cases, you will find the calculated come up card information is correct. However, some subsonic ammunition can give erratic results. Always verify subsonic ammunition point of impact at every distance by live fire.

You have now successfully zeroed your rifle's Horus Vision Sighting System to use both supersonic and subsonic ammunition interchangeably without adjusting your windage or elevation knobs. Remember that it is good practice to confirm zero when changing to a different lot of ammunition from the same manufacturer. There can be performance differences between lots, despite ammunition from the same manufacturer ostensibly being loaded to the same precise specifications from lot to lot. Of course, you ALWAYS re-zero if you switch manufacturers or bullet weights.

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