

H36 Reticle

Spotting Scope System

THE HORUS SYSTEM

Model 2000 series

User's Manual

January 2008



FOR INFORMATION OR SALES

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- 30 day money back guarantee.
- 2 year direct replacement normal wear and tear excepted.
- Limited lifetime warranty for defects and workmanship

The product is covered by a lifetime warranty against manufacturer’s defects. Please be aware that the warranty only covers manufacturer’s defects. It does not cover the following:

- General wear and tear, such as scratches, dents, nicks, or missing pieces
- Water damage
- Fading/chipping of the material on the product
- Lost or stolen parts
- Damage due to personal misuse or negligence.

Limitations on Damages: For Breach of any written or implied warranty on this product, the consumer is limited to the following damages: Repair of the product or replacement with an identical or equivalent model, at the election of Horus Vision. Horus Vision is not liable for any other damages, such as special, incidental, or consequential damages, resulting from the use of this product. Note: Some States do not allow the exclusion or limitation of Special, Incidental or consequential damages.

THE SPOTTING SCOPE

The variable power spotting scope is a valuable tool for the forward observer, designated marksman, sniper, artillery and tank crews. While primarily used for observation, the Horus Vision Spotting Scope with the Patented Horus Vision Reticle can be used to make target 'strike' adjustments with precision. This variable power unit has the following benefits:

At the higher powers, the observer can see greater detail, define smaller objects, and use the Horus Vision H36 reticle to spot shots on target. The higher powers work best in colder weather or in the cooler temperatures of early morning hours. As the daytime temperatures rise, the spotting scope at these higher powers will encounter the distortions of mirage and temperature waves unless the spotter is positioned above these conditions. As a result, the usefulness at the highest power is diminished.

At Mid to Low Power, The observer enjoys a greater field of view and therefore can observe a much larger area of activity. At these lower powers, the effect of mirage and temperature waves is reduced, therefore, as the temperatures rise increasing the mirage factor, by simply reducing power, these conditions become manageable and the target can still be observed.

The Spotting Scope, 12-40X60, Optic is fitted with the new Horus Vision H36 Reticle. This reticle is calibrated in Mil Radians. A Mil Radian in this optic subtends to 3.6 inches at 100 yards or 10cm at 100 Meters.

The Horus Vision H36 Reticle

The Horus Vision H36 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 H36 Reticle requires no batteries and no working parts subject to failure. There are two ‘Grids’ on the Horus Vision H36 Reticle...(A) the Mil Radian Grid in the lower center of the optical view and (B) the Backward Inverted ‘L’.

What does the Horus Spotting Scope Reticle do?

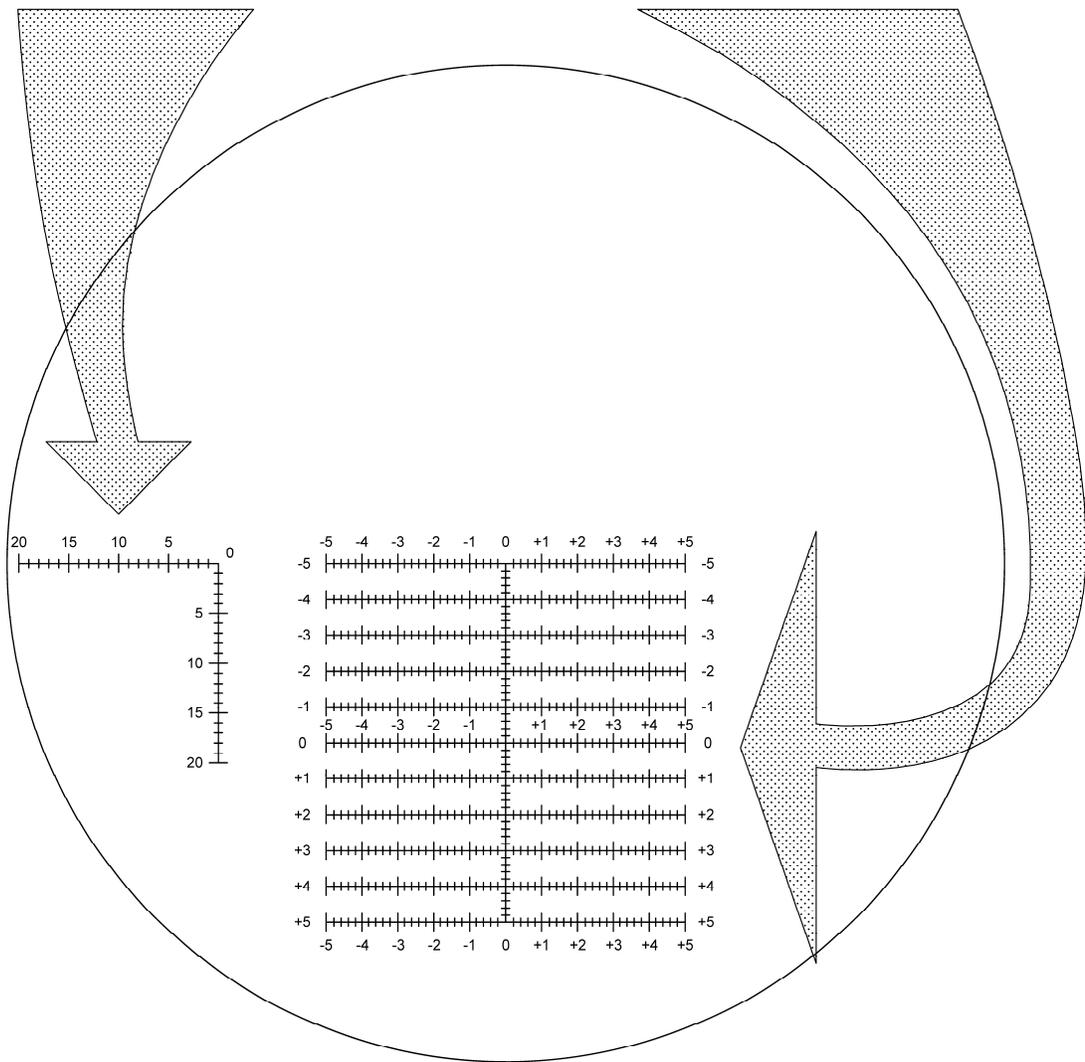
H36

1 RANGEFINDER

Use the rangefinder to determine the distance to your target in yards

2 TARGETING GRID

Use the the grid to determine 2nd shot correction & as a rangefinder in meters



A) RANGEFINDING MILRADIANT METHOD

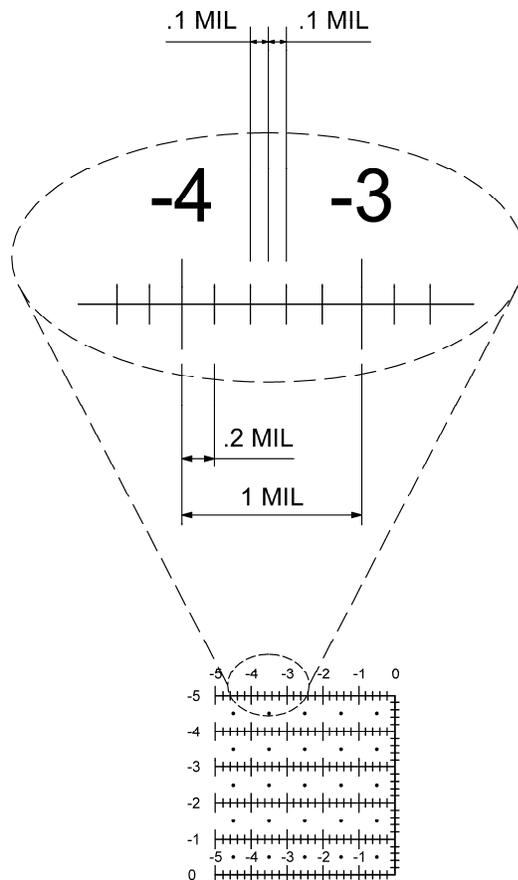
Using the Upper Left Quadrant of the Main Targeting Grid as a Rangefinder

Rangefinder Grid Based on:

A Circle = 6283 MILS (USMC Standard)

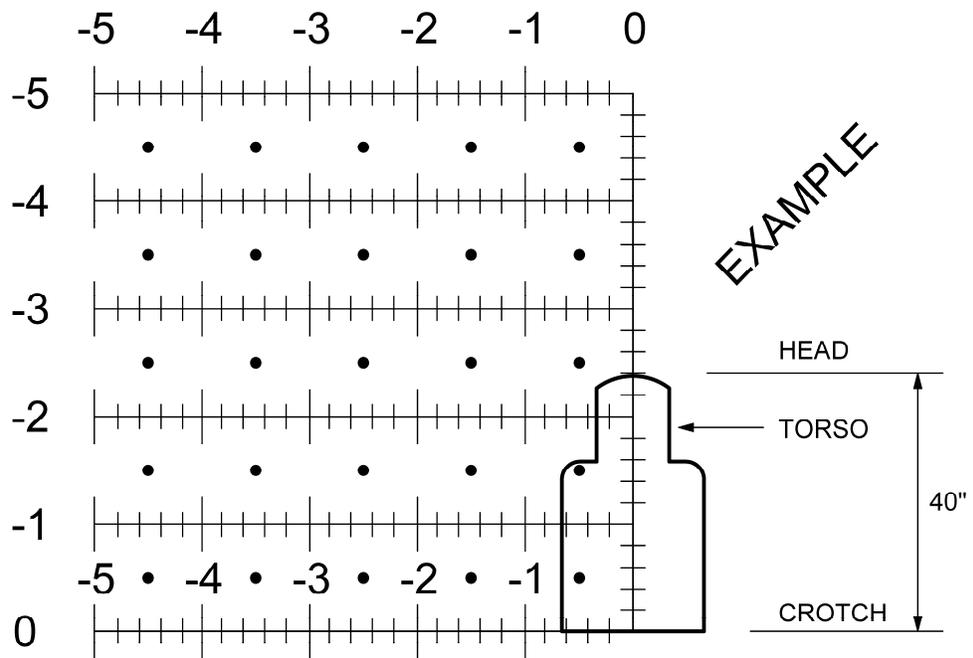
1 MIL = 3.60 inches @ exactly 100 Yards

1 MIL = 10.0 cm @ exactly 100 Meters



Note: You can use any part of the grid for range finding

RANGEFINDING USING THE MILRADIAN METHOD



TARGET = 40 OR 40"/ 36 = 1.11 YARDS

HEIGHT IN RANGEFINDER = 2.4 MILS

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

$$\text{RANGE} = \frac{1.11 \times 1000}{2.4} = 463 \text{ YARDS}$$

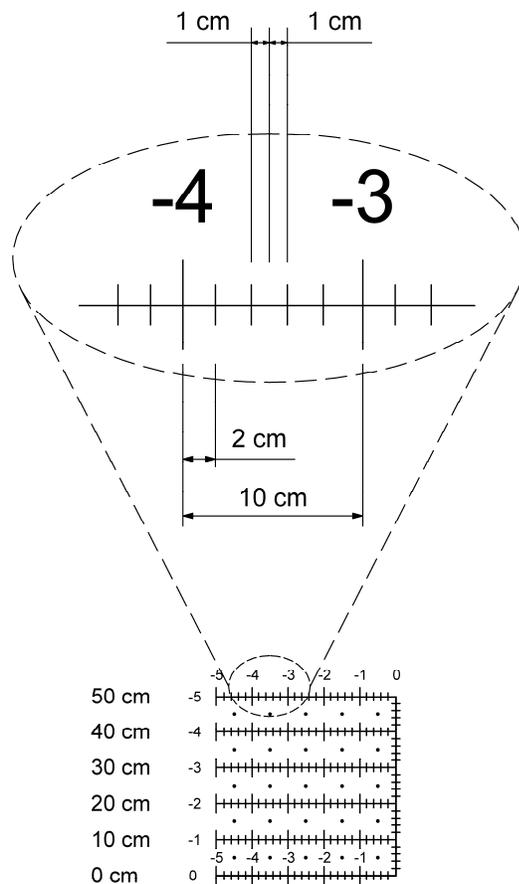
NOTE: "1000" IS A CONSTANT
FOR U.S.M.C. MIL DOT

B) RANGEFINDING METRIC METHOD

Using the Upper Left Quadrant of the Main Targeting Grid as a Rangefinder

Rangefinder Grid Based on:
1 MIL = 10.0 cm @ exactly 100 Meters

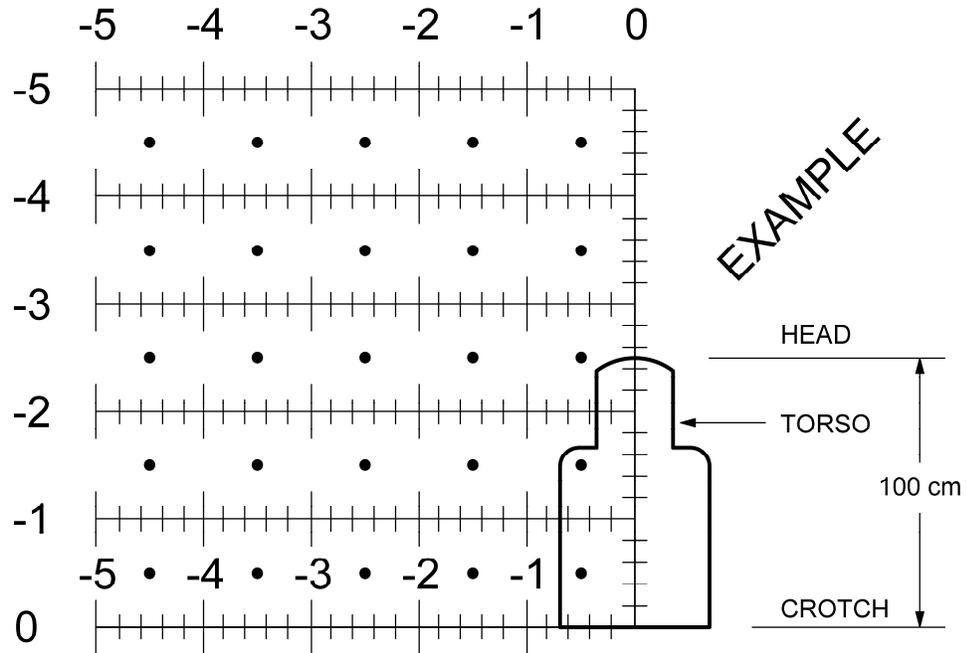
(Simply add a zero to the Mil number
& you have a Centimeter Scale)



Note: You can use any part
of the grid for range finding

RANGEFINDING USING THE METRIC METHOD

(USING THE TARGETING GRID CALIBRATED IN USMC MILS)



TARGET = 100 CENTIMETERS

HEIGHT IN RANGEFINDER = 25 CENTIMETERS

$$\text{RANGE IN METERS} = \frac{\text{HEIGHT OF TARGET IN CENTIMETERS} \times 100}{\text{HEIGHT OF TARGET IN RANGEFINDER IN CENTIMETERS}}$$

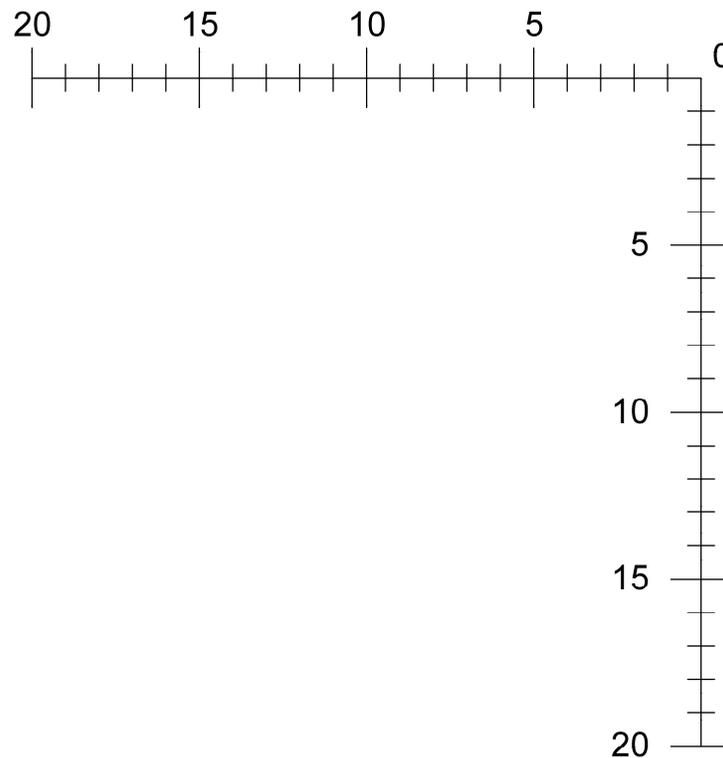
$$\text{RANGE IN METERS} = \frac{100 \text{ cm} \times 100}{25 \text{ cm}} = 400 \text{ METERS}$$

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

C) RANGEFINDING

INCH OF ANGLE METHOD (IOA)

(A method that uses inches and yards...
no metric or mil knowledge is required)

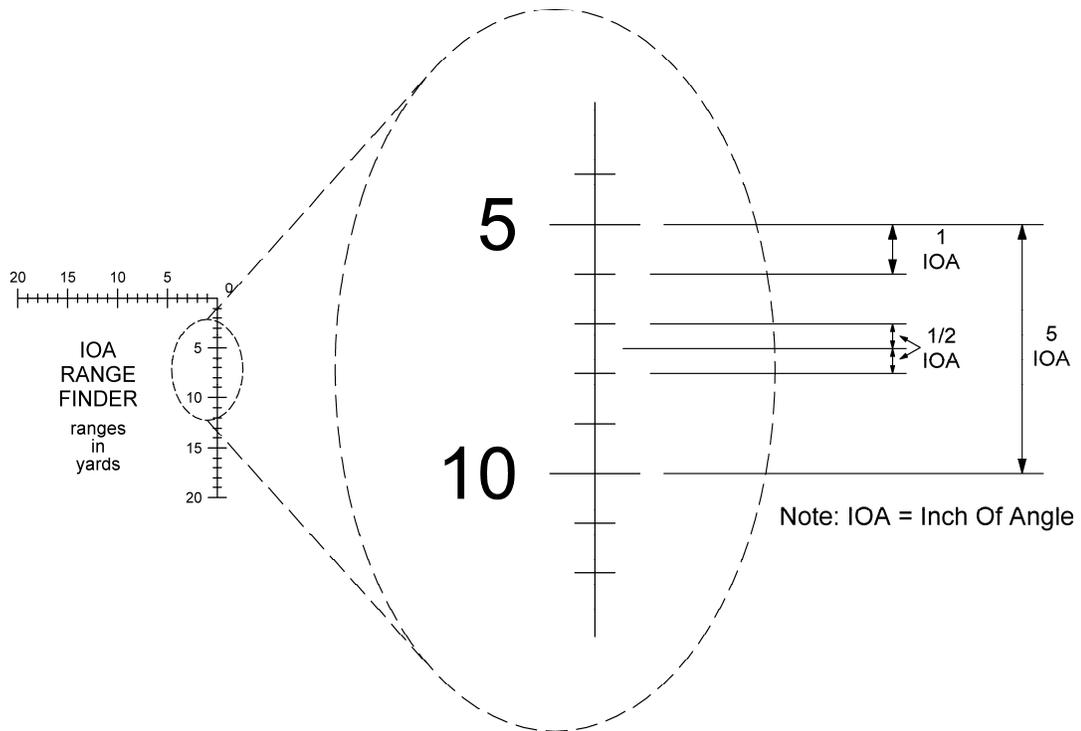


The "Engilsh" Range Finder on the H-36 Reticle appears as a backward upside down "L" on the reticle as shown above. On some of the other Horus Vision Reticles, this grid is reversed. The following example, for the purpose of ease of demonstration, shows the 'grid' reversed. Right side up or upside down, the ranging system works the same way.

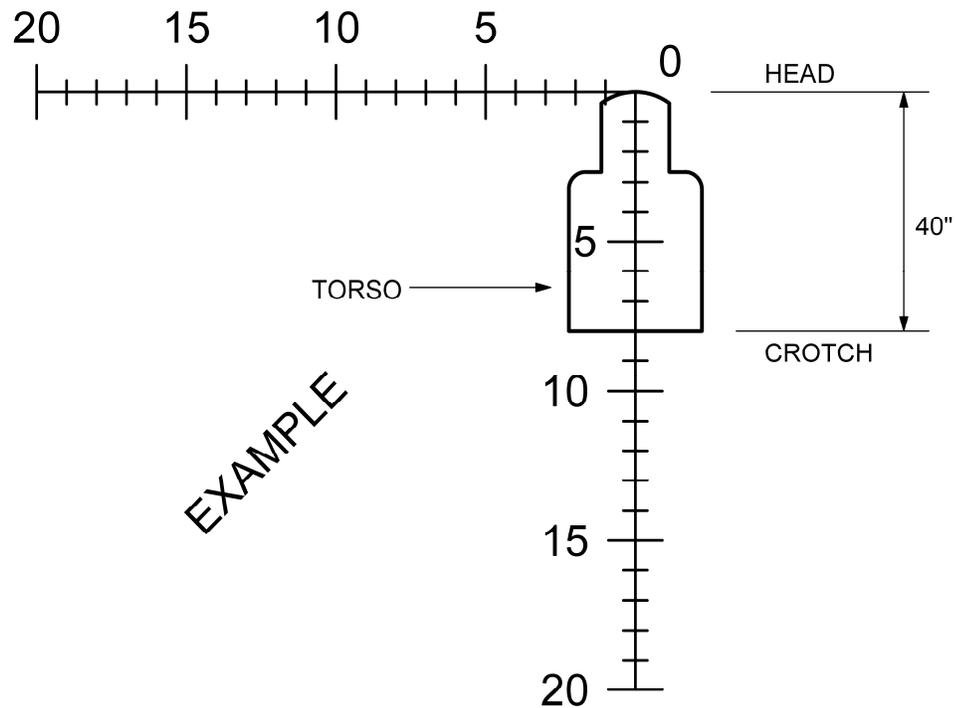
INCH OF ANGLE METHOD (IOA) OVERVIEW

RANGEFINDER

Backward "L" for rangefinding using the English designation of inches & yards to determine the range to the target



RANGEFINDER - INCH OF ANGLE METHOD (IOA)



TARGET = 40 INCHES FROM HEAD TO CROTCH

HEIGHT IN RANGEFINDER = 8

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

$$\text{RANGE} = \frac{40 \times 100}{8} = 500 \text{ YARDS}$$

NOTE: "100" IS A CONSTANT FOR
 ENGLISH METHOD

SECOND SHOT CORRECTION™

All vari-power spotting scopes that employ the H36 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 H36 reticle for 2nd shot correction, please use the highest magnification that ambient conditions allow.

When the rifleman and the spotter are working as a team, the H36 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 H36 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:

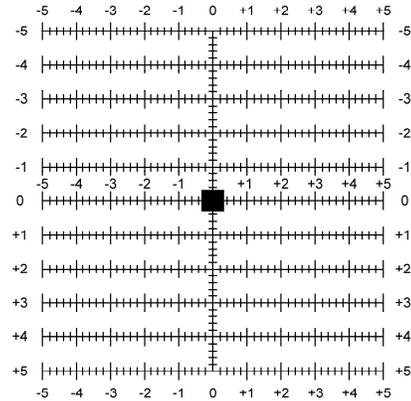
2ND SHOT CORRECTION - SPOTTING SCOPE

1



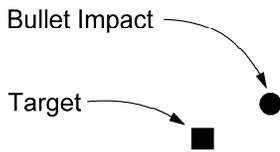
2

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



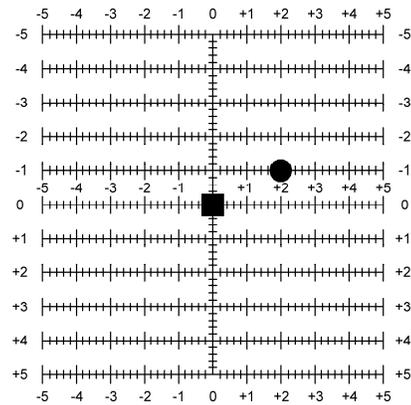
3

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



4

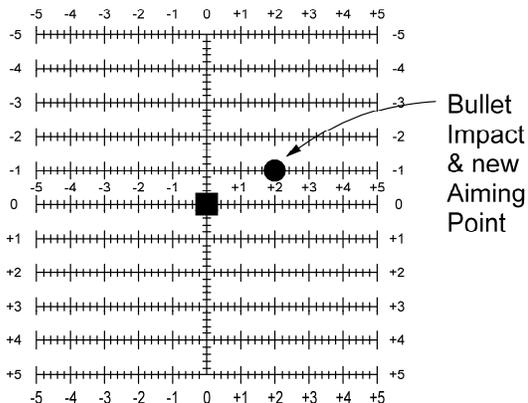
The spotter sees where the bullet hit and informs the rifleman that the impact is 1 mil up and 2 mils to the right.



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

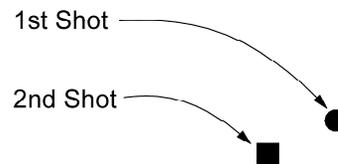
5

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.



A LETTER FROM THE 'FIELD'

Sent: Thursday, September 22, 2005 4Z:27 PM

To: dennis@horusvision.com

Subject: Spotting Scope

_____ is assigned the OPFOR mission at _____, Crucial to our success is our recon teams. We use dismounted recon as our primary intel assets because of their concealability and small signature. Because they are dismounted they are very choosy on what equipment they bring on missions. One piece of gear that is a 'must' is the Horus Vision spotting scope. These have been useful in numerous ways. As an optical device they are excellent. The long range spotting ability of the scope is a great improvement over standard binoculars for identifying and classifying long range targets (sometimes over 15km away). The fact that they are light, compact, and rugged (with their own padded nylon case attached) makes them a good piece of gear for our scouts.

The mil scale reticle is also useful for getting range determinations. Until we received the LP-10 artillery spotting optics we were completely dependent on the Horus Vision scopes for range calculations at observed targets. If something was spotted out in the open desert, and its locations could not be determined by terrain association, we would use the scope's mil scale system. Scout teams carried size measurement lists of common military equipment. Once something was spotted the scouts would calculate the mil size of the object, then compare it with the equipment size chart. That would give a rough estimate of range. Combine this with a known observer location and a compass azimuth to the target, and you have a location to the observed object.

We also used the spotting scopes in their intended roles while out on the tang gunnery ranges. When screening the tanks main armament the Horus system could give very accurate measurements of target hits in relation to the center mass on the 1500m screening targets.

MAJ _____
Executive Officer

A New Reticle for Spotting Scopes

(Available Fall 2006)

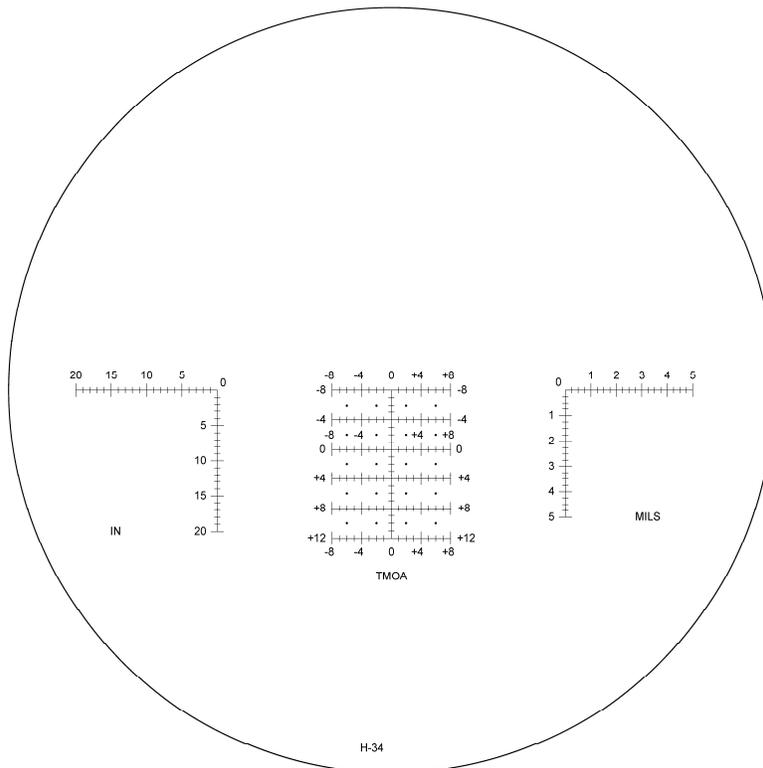
H34 Spotting Scope Reticle

The H34 was designed to facilitate the rifleman using the Mil-Dot Rifle scope that has come-up adjustments (clicking) calibrated in TRUE MINUTE OF ANGLE (TMOA). One (1) TMOA subtends exactly 1 inch at exactly 95.5 yards. The Central Targeting Grid of the H34 is calibrated in TMOA, which matches the calibration adjustments of most Mil-Dot Riflescopes. This uniform calibration allows a very accurate 2nd Shot Correction.

The H34 has 2 rangefinders. The first (1st) is located on the lower left quadrant and is calibrated in Inches of Angle (IOA) for those using inches and yards as a medium of measure. The second (2nd) is located on the lower right quadrant and is calibrated in USMC Mils for those using the milradian method of measure.

How is it different than the H36 spotting scope reticle?

Horus Vision's current spotting scope reticle the H36 has a Central Targeting Grid calibrated in Mils, (6283 Mils equals 1 circle.). The H36 was designed to facilitate a rifleman using a riflescope equipped with the Horus Reticle or a conventional riflescope with the come-up calibrated in Mils and /or metric equivalent.



H-34

H34

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