WARPATH

SIGHT ADJUSTMENT

PISTOL – CARBINE – LONG RANGE

WHO THIS IS FOR
First-time shooters who want hits where they aim, and experienced shooters who want a fast reference. Plain English first, math second.

THE ONE RULE TO REMEMBER
Move the rear sight, dot or scope turret TOWARD where you want the hits to go. A front sight post works the other way: move it AWAY from where you want the hits to go.

HOW TO USE
1. Read Basics (pages 3-4) once.
2. Go to your section: Pistol, Carbine or Long Range.
3. Shoot on a Warpath zero target (#1 pistol, #2 rifle). Log it on the range log (#6) or DOPE card (#7).
4. Cut out the quick-reference card (page 13) and keep it in your range bag.

SAFETY
Follow your range rules. Eye and ear protection on. Make sure the firearm is unloaded before you touch the sights, and keep the muzzle in a safe direction.

Every click value in this guide is a typical value. Your sight manual is the final word.

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BASICS

WHAT "ZERO" MEANS
Your sights and the barrel do not point the same way. The sights look in a straight line; the bullet flies in a curve that starts below the sights. Zeroing means adjusting the sights so the bullet path crosses your line of sight at a distance you choose (the zero distance). At that distance, hits land where you aim.

POINT OF AIM (POA) vs POINT OF IMPACT (POI)
POA is where the sights are on the target. POI is where the bullet hits. Zeroing makes POI match POA at your zero distance.

GROUP FIRST, THEN ADJUST
Never adjust off one shot. Fire 3 to 5 careful shots at the same aim point from a stable rest. Find the center of the group, measure from the aim point to that center (up/down and left/right, in inches), then adjust. Fire a new group to confirm. If the group is bigger than the size of your correction, work on the shooting first.

THE GOLDEN RULE

YOU ADJUST	WHICH WAY	RESULT
Rear sight / dot / turret	Toward where you want hits	Hits move that way
Front sight post (rifle)	Opposite	Post down = hits up
Front sight height (pistol)	Taller / shorter	Taller = hits lower

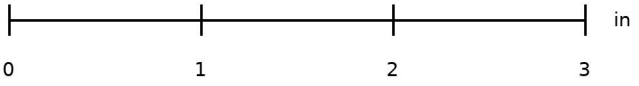
Dots and scopes have arrows on the cap or turret marked U (up) and R (right). Turning in the arrow direction moves the hits that way. Check the markings on your own optic.

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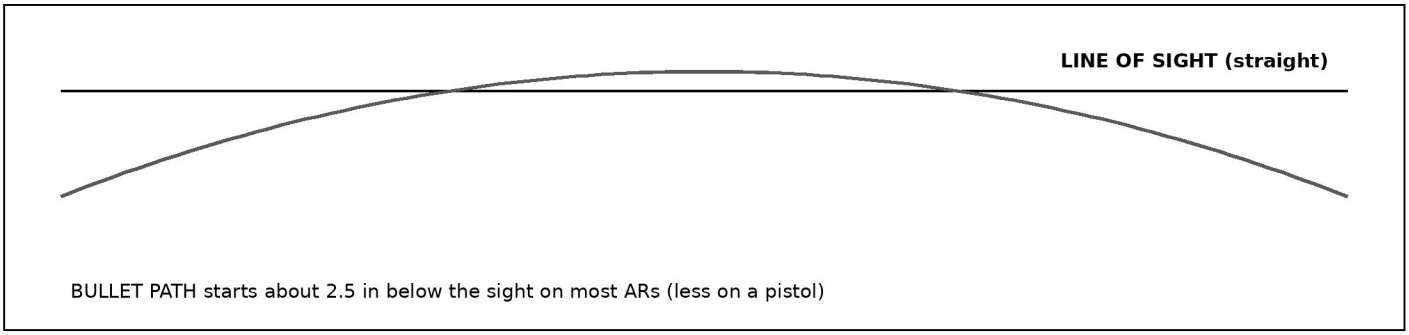
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BASICS: SIGHT HEIGHT AND CLICKS

MECHANICAL OFFSET (SIGHT HEIGHT) - not to scale



Up close, the bullet hits LOW by about the sight height, even with a good zero. That is why a rifle with an optic hits low at 5-10 yd: aim higher by that amount ("holdover" up close). Learn your offset on target #17 Precision + Offset.

MOA AND MIL IN PLAIN ENGLISH
Both are angles, so the inches they cover grow with distance.
1 MOA = 1.047 in at 100 yd (call it 1 in). 1 MIL = 3.6 in at 100 yd. A MOA dial and a MIL reticle do not mix; use matching units.

ONE CLICK MOVES THE HIT THIS MANY INCHES

CLICK	25 YD	50 YD	100 YD	200 YD	300 YD
1/4 MOA	0.07	0.13	0.26	0.52	0.79
1/2 MOA	0.13	0.26	0.52	1.05	1.57
1 MOA	0.26	0.52	1.05	2.09	3.14
0.1 MIL	0.09	0.18	0.36	0.72	1.08

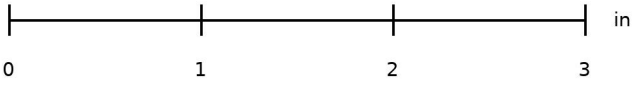
Clicks needed = inches to move / inches per click. Round to the nearest click. Example: 1/4 MOA at 100 yd, hits 1.5 in low: 1.5 / 0.26 = 5.8, so 6 clicks UP.

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PISTOL

ZERO DISTANCE
Confirm at 25 yd if you can (errors show up bigger). Start at 10-15 yd to get on paper. Use target #1.

FIXED IRON SIGHTS
Windage: drift the REAR sight toward where you want hits (drift right = hits right). Use a sight pusher tool, not a hammer and punch, if you can. Elevation on most fixed sights is set by front sight height: a TALLER front sight moves hits DOWN, a SHORTER one moves hits UP. Some makers sell fronts in several heights; check your maker's chart.

ADJUSTABLE REAR
Raise the rear = hits go up. Move the rear right = hits go right. Turn the screw in the direction of the marked arrow.

PISTOL RED DOTS
Typical click values: Trijicon RMR and Holosun 507C 1 MOA per click; other dots vary. Check your manual [3][4].

DOT CLICK	INCH / CLICK 15 YD	CLICKS / IN 15 YD	INCH / CLICK 25 YD	CLICKS / IN 25 YD
1 MOA	0.16	6.4	0.26	3.8
1/2 MOA	0.08	12.7	0.13	7.6

SHOOTER OR SIGHTS?
Most pistol misses are the shooter, not the sights. Before you touch the sights: shoot from a rest, or have a skilled shooter fire a group. If both of you land in the same spot, adjust the sights. If the shots scatter or string low (common: low-left for right-handed shooters from jerking the trigger or pushing against recoil), fix grip and trigger first. See the Troubleshooting chart.

PISTOL CHEAT SHEET

Dot or adjustable rear: turn toward where you want hits.
Drift rear sight right = hits right.
Taller front sight = hits LOWER. Shorter = higher.
1 MOA dot at 25 yd: 4 clicks = about 1 in [3][4].
Shoot 5 from a rest, adjust from group center, confirm.

CARBINE

AR FRONT SIGHT POST (elevation)
Press the detent and turn the post with a sight tool. The housing is marked with an arrow and "UP": turning that way lowers the post and moves hits UP. Front post = opposite rule.

A2 / CARRY-HANDLE REAR SIGHT
Windage drum (right side): turn the way the arrow marked R shows to move hits right. Elevation drum (under the aperture): turning it raises or lowers the rear sight, which moves hits up or down. Zero with the front post; use the drum for distance. Values per Army FM 3-22.9 [1]:

ONE CLICK	25 M	100 M	200 M	300 M
Front sight post	0.9 cm	3.5 cm	7 cm	10.5 cm
Rear windage drum	0.3 cm	1.25 cm	2.5 cm	about 4 cm

From FM 3-22.9 Table 2-7 (M4) and the 25 m click rule (0.33 cm windage per click, scaled by distance). About 3/8 in per front click and 1/8 in per windage click at 25 m.

RED DOTS AND LPVOs
Same rule as a pistol dot: turn the turret toward where you want hits, using the U and R arrows. Typical values: EOTech HWS 1/2 MOA per click [5]; Aimpoint Micro T-2 13 mm at 100 m per click (0.5 in at 100 yd) [6]. Many LPVOs use 1/2 MOA or 0.1 MIL per click; read the turret cap.

BACKUP IRONS
Zero the optic first, then the irons, or the other way round: just do one at a time and confirm both at the same distance.

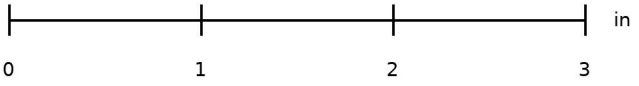
25 M IRON SIGHT MATH

Move 1 in (2.5 cm) up or down: about 3 front post clicks.
Move 1 in left or right: about 8 rear windage clicks.
Front post: turn the UP arrow way = hits UP.
Rear drum: turn the R arrow way = hits RIGHT [1].

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CARBINE: WHICH ZERO?



Schematic only - not to scale

The bullet starts below the sight, rises through the line of sight (1st crossing), peaks, and drops back through it (2nd crossing). Picking a near zero sets the far one.

Zeroing on a short range is a starting point: the first and second crossings depend on sight height and velocity, so always confirm at the far distance before you trust it.

ZERO	CROSSES AGAIN NEAR	GOOD FOR
50 yd	about 200 yd	General carbine use
36 yd	about 300 yd	Longer point-blank; higher mid-range
100 yd	Hits fall low past 100 yd	Precision, LPVO, dialing

Commonly reported for 5.56 from a 14.5-16 in barrel. Exact distances change with ammo, barrel and sight height: check a ballistic calculator and confirm on paper. Army FM 3-22.9 zeros M4 iron sights at 25 m for a 300 m battlesight zero [1].

BEFORE YOU PICK

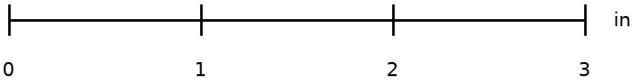
Short range zero is a start. Confirm at the far distance.
Write your zero and ammo on a piece of tape on the stock.

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LONG RANGE

SCOPE TURRETS
Elevation on top, windage on the side. Turn in the direction of the arrow (U, R) to move hits that way. Read the cap: it says 1/4 MOA or 0.1 MRAD (MIL) per click. Match the turret to the reticle.

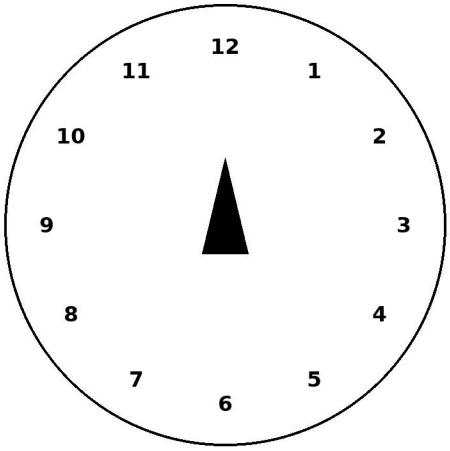
FIRST vs SECOND FOCAL PLANE
First focal plane (FFP): reticle marks are correct at every magnification. Second focal plane (SFP): marks are correct at only one power, usually max; check your manual [2].

MATH (no calculator? use these)
MIL needed = inches x 27.78 / yards (or: inches / (3.6 x yards / 100)).
MOA needed = inches / (1.047 x yards / 100).
Example: 300 yd, hits 6 in low. MIL: 6 x 27.78 / 300 = 0.56, dial 0.6 MIL (6 clicks) UP. MOA: 6 / 3.14 = 1.9, dial 2 MOA (8 clicks of 1/4) UP.

ZERO STOP
After you zero (usually 100 yd), loosen the turret, set it to 0 and set the zero stop per the manual. Now the dial cannot go below zero, so you can always return to zero by feel, even in the dark [7].

DOPE (Data On Previous Engagements)
DOPE is the elevation and wind you actually needed at each distance. Use your ballistic app for a first guess, then shoot and record what really worked on the Warpath DOPE card (#7): distance, elevation, wind, temperature, humidity, date and time. Real data beats the app. Re-check when ammo lot, altitude or weather changes a lot.

LONG RANGE: WIND, PARALLAX, CANT



WIND CLOCK
You face 12 o'clock (the target).
Wind from 3 or 9: full value.
From 1, 2, 4, 5, 7, 8, 10, 11: half value (Army clock method) [8].
From 12 or 6: no value.
Many shooters count 2, 4, 8, 10 as about 85-90% (commonly reported).
Wind pushes the bullet the way it blows: wind from 9 pushes hits RIGHT, so hold or dial LEFT.

PARALLAX
With the rifle still, move your head a little behind the scope. If the reticle seems to slide on the target, adjust the parallax (side focus or objective) until it stops moving and the target is sharp. Then the reticle will not shift with your eye position [2].

CANT (tilted rifle)
If the scope is tilted, dialing up also moves the hit sideways, and the error grows with distance. Level the reticle to the rifle when you mount it, and use a scope level bubble when you shoot.

COLD BORE
The first shot from a cold, clean or oiled barrel can land in a different spot from the shots after it. Do not adjust off that shot. Log it: 1 cold shot, then a group, every session (Cold Bore Log drill, and the DOPE card #7) [9]. After several sessions you will know your cold-bore shift.

WIND QUICK MATH

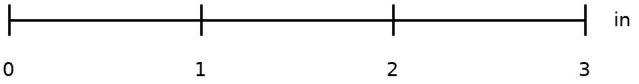
Correction = wind speed x value x your 1 mph drift.
Example: 8 mph from 9 o'clock, full value, 0.5 MOA per mph (USAMU 600 yd example) = 4 MOA. Half value = 2 MOA [8].
Your drift per mph comes from your DOPE, not this guide.

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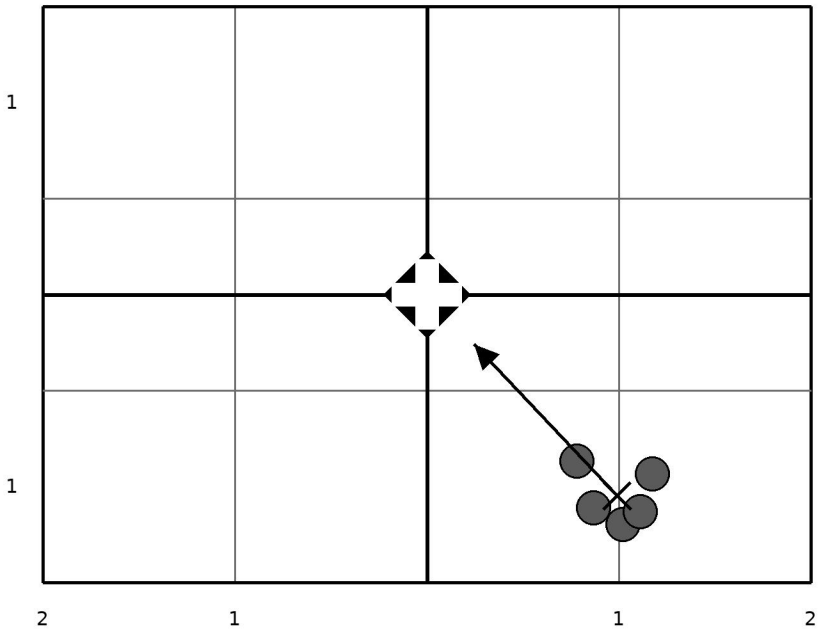
TROUBLESHOOTING

WHAT YOU SEE	LIKELY CAUSE	FIX
Tight group, off center	Sights not zeroed	Adjust using this guide
Clicks do nothing / jump	Loose mount or ring	Torque per maker; re-zero
Moves after each session	Loose optic, cold bore	Witness marks; log cold shot
Big, scattered group	Shooter, ammo or rest	Fix basics; stable rest
Pistol low-left (righty)	Jerk or anticipation	Dry fire; slow press
Hits move with your head	Parallax	Adjust parallax knob
Off sideways when dialed up	Cant (tilt)	Level reticle; use bubble
Up close, hits low	Sight height (normal)	Hold over up close
Zero shifts with new ammo	Different load	Re-zero on that ammo
Ran out of adjustment	Mount or base issue	Check mount; canted base
Dot moves opposite way	Turned against arrow	Follow U / R arrows

Rule of thumb: if two good shooters, or one shooter from a solid rest, land in the same off-center spot, it is the sights. If the group is all over, it is the shooting. Pistol shot diagnostics charts are a starting point, not a diagnosis (commonly reported).

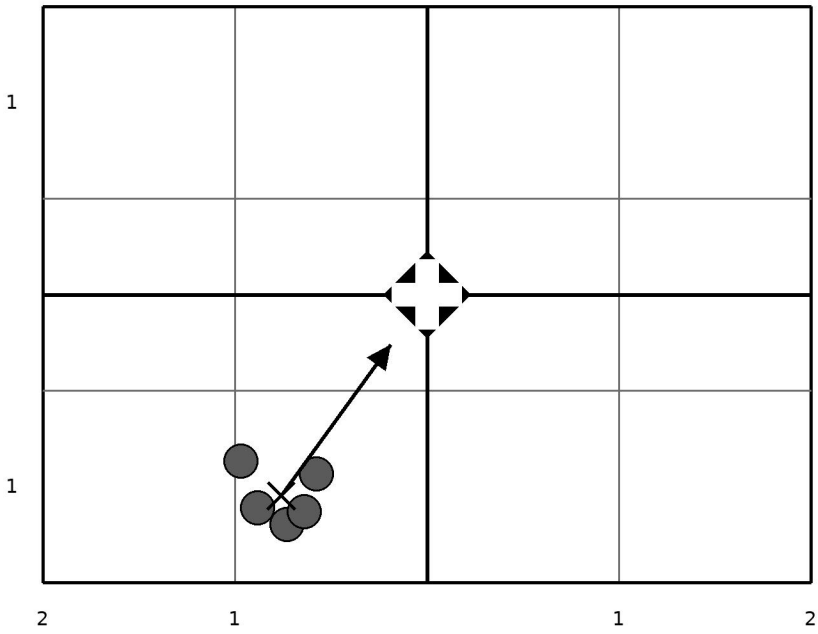
WORKED EXAMPLES

1. PISTOL RED DOT - target #1, 25 yd, 1 MOA per click



Group center: 1 in LOW, 1 in RIGHT.
1 MOA at 25 yd = 0.26 in.
Up: 1 / 0.26 = 3.8 = 4 clicks UP.
Left: 1 / 0.26 = 3.8 = 4 clicks LEFT.

2. SCOPE IN MIL - 100 yd, 0.1 MIL per click

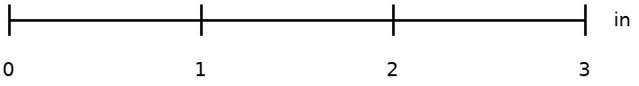


Group center: 1 in LOW, 0.75 in LEFT.
0.1 MIL at 100 yd = 0.36 in.
Up: 1 / 0.36 = 2.8 = 3 clicks UP.
Right: 0.75 / 0.36 = 2.1 = 2 clicks RIGHT.

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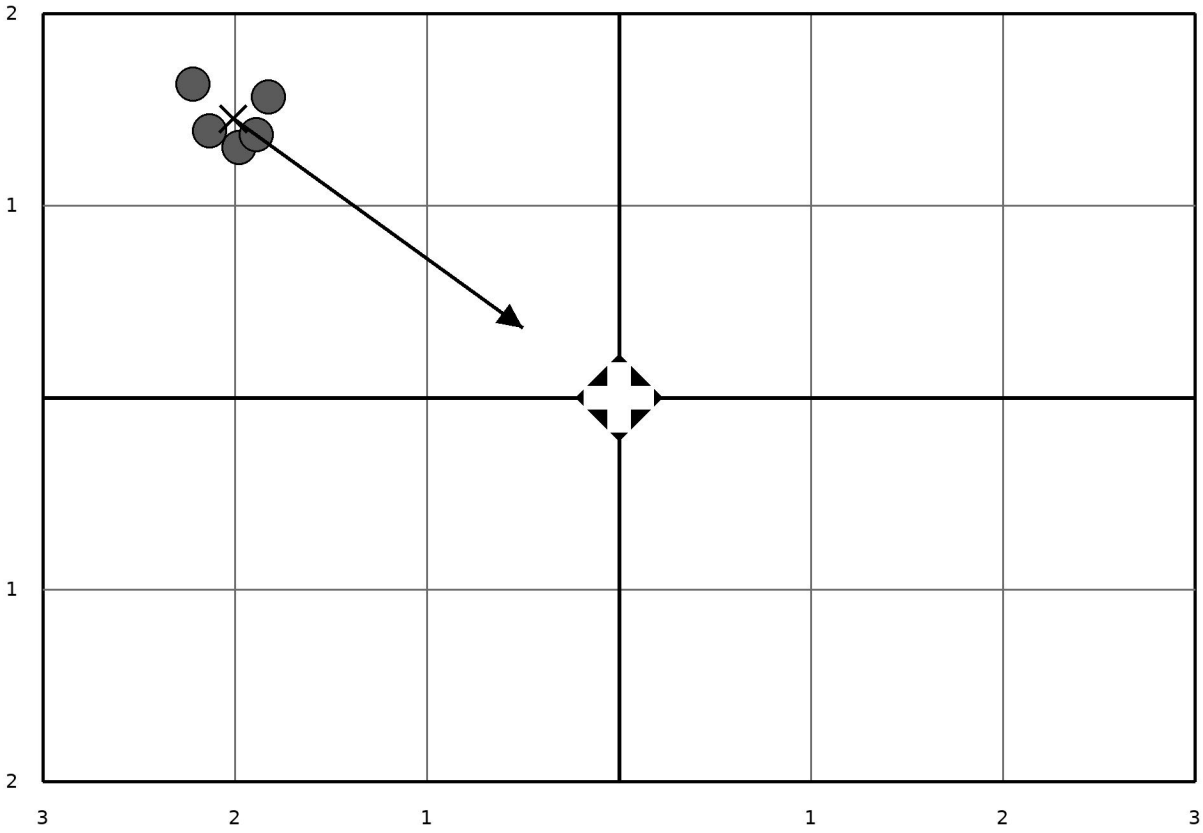
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WORKED EXAMPLES (CONT.)

3. CARBINE DOT - target #2, 50 yd, 1/2 MOA dot



Group center: 1.5 in HIGH, 2 in LEFT. 1/2 MOA at 50 yd = 0.26 in. Down: 1.5 / 0.26 = 5.8 = 6 clicks DOWN. Right: 2 / 0.26 = 7.7 = 8 clicks RIGHT. Fire a new group to confirm.

4. AR FRONT SIGHT POST - 25 m, hits 1 in (2.5 cm) HIGH
One post click moves hits about 0.9 cm at 25 m [1]. 2.5 / 0.9 = 2.8, so 3 clicks to move hits DOWN: turn the post OPPOSITE the "UP" arrow (raises the post).

QUICK-REFERENCE CARD

Cut on the outline (two cards: 3.5 x 4.0 in each). Fold or laminate.

THE RULES

Rear sight, dot, turret:
move TOWARD where you
want the hits to go.
Front post: the opposite.
Taller pistol front:
hits go lower.
Shoot a 3-5 shot group.
Adjust from the group
center. Fire to confirm.
Up close, hits land low
by about the sight height.

CLICK MATH

Inches per click, 100 yd:
1/4 MOA = 0.26
1/2 MOA = 0.52
1 MOA = 1.05
0.1 MIL = 0.36
Scale by yards / 100.
Clicks = inches / per click
MIL = in x 27.78 / yd
MOA = in / (1.047 x yd / 100)
Wind: 3 and 9 full value;
other angles half value.

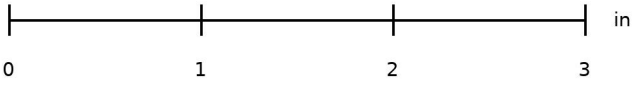
Typical values only. Your sight or optic manual wins.

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SOURCES (each opened and checked October 27, 2026)

[1] U.S. Army FM 3-22.9, Rifle Marksmanship M16-/M4-Series Weapons (2003): Tables 2-5 and 2-7 (click values, 25 m zero for 300 m), Chapter 5, 25 m click rule (0.33 cm windage, 0.83 cm front post).
[2] Vortex Optics riflescope manuals (Viper PST, Razor HD): first vs second focal plane subtensions; parallax check by moving your head.
[3] Trijicon RMR instruction manual PML1016-1, trijicon.com: "one (1) MOA per click".
[4] Holosun HS507C manual and holosun.com product page: about 1 MOA per click (1/4 in at 25 yd).
[5] EOTech HWS manuals (EXPS2, 5-series), eotechinc.com: about 1/2 MOA per click, 1/2 in at 100 yd.
[6] Aimpoint Micro T-2 user manual 13939-6: 1 click = 13 mm at 100 m = 0.5 in at 100 yd.
[7] Nightforce ZeroStop instructions (nightforceoptics.com/zerostop) and ATACR owner manual: set only after zeroing.
[8] U.S. Army FM 23-10, Sniper Training, para 3-12: full value 3 and 9; half value 1, 2, 4, 5, 7, 8, 10, 11; no value 12 and 6. Also CMP / USAMU wind article (odcmp.org).
[9] getballisticapp.com/training/cold-bore/: 1 cold shot, wait 2 minutes, 4 more, repeat on 8 or more days.

MATH

1 MOA = 1/60 degree = 1.047 in at 100 yd. 1 MIL = 1/1000 radian = 3.6 in at 100 yd. Table values are calculated from these.

CONFIDENCE

Click values come from the maker and Army manuals above. Zero crossing distances (50/200, 36/300), the 85-90% oblique wind value and the low-left pistol diagnosis are commonly reported and change with your gun and ammo. Always confirm on paper.

