

50 *Leatherwood*

AUTOMATIC RANGING & TRAJECTORY SCOPES

years



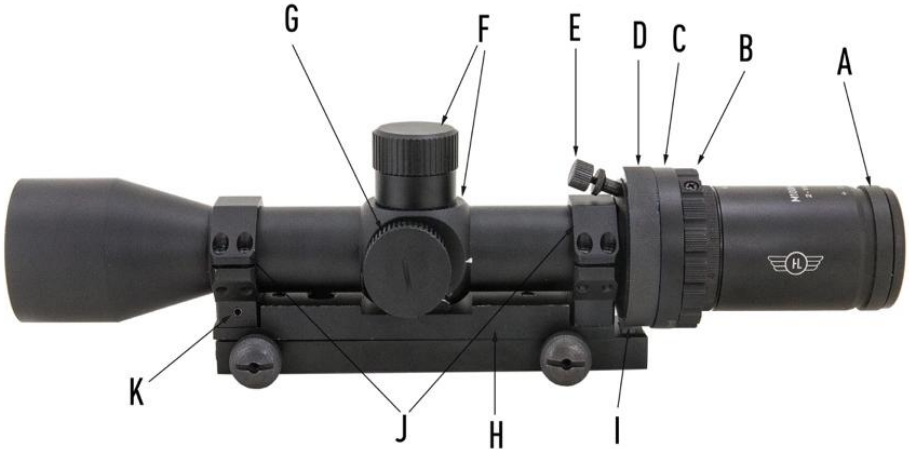
Owner's Manual



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Nomenclature



A. Eyepiece:

The Eyepiece (A) is located at the rear of the scope. Adjust the scope's reticle focus to suit your eyesight by turning Eyepiece clockwise or counter-clockwise.

B. Range Ring/Power Ring:

The Range Ring (B) encircles the Power Ring and has a scallop shaped, knurled outside face. There are two sets of numbers on the Range Ring. The lower set is magnification. The upper set is distance.

The triangle on the Eyepiece (A) indicates the magnification setting in manual mode or the distance in automatic mode.

C. Calibration Ring:

The Calibration Ring (C) is located behind the Range Ring (B) and has a series of numbers and increments for setting the Trajectory Cam (D). The scale is marked from 2 to 10 and represents Trajectory Cam settings 200 to 1000.

The Trajectory Cam settings are changed by loosening the thumbscrew on the Calibration Ring (C). Trajectory Cam settings are indicated by arrow on the Trajectory CAM (D).

D. Trajectory Cam:

The Trajectory Cam (D) is adjacent to the Calibration Ring (C). The Trajectory CAM (D) sits on a nylon cam roller in the rear of the base in the scope mount.

As you turn the Trajectory CAM, the back end of the base will rise or lower, automatically compensating for your bullet drop. The amount of external elevation adjustment added by the Trajectory CAM depends on the CAM setting.

Warning: Never loosen the setscrew on the Trajectory Cam (D) unless you are changing the installed Trajectory Cam with a custom Trajectory Cam.



E. CAM Brake Screw:

The CAM Brake Screw (E) is located in front of the Trajectory Cam (D) and is used to lock the Trajectory Cam when you are shooting at a specific range.

There are two parts to the screw. The top half of the CAM Brake Screw locks the Trajectory Cam (D) in place. The bottom half of the CAM Brake Screw keeps the screw in place.



F. Elevation and Windage Adjustments:

The Elevation and Windage Turrets (F) move the point of impact by ¼ MOA or ¼ inch at 100 yards per click. Total range of the adjustment is 100 MOA for elevation and 80 MOA for windage. The threaded turret caps seal out moisture and debris. They also prevent accidental adjustment of the turret when transporting the scope.

Both the elevation and windage turrets can be re-indexed to correspond to your actual zero.

G. Rheostat

The Rheostat (G) is on the left side of the scope turret block. NV1, NV2, and NV3 are for use with night vision optics. 4 and 5 are for low light illumination and 6 to MAX are for medium brightness light conditions. 0 is off.

H. Mount Cradle:

The Mount Cradle (H) allows the trajectory cam to move the scope in a vertical plane. The scope can be rotated slightly within the Scope Rings (J) to plumb the crosshairs with the rifle..

I. CAM Roller

The Cam Roller (I) allows the Trajectory CAM (D) to rotate smoothly when making ranging adjustments.

J. Scope Rings:

The **M1000-PRO** is pre-centered on an optical collimator at the factory, so you do not need to loosen or remove the scope rings. If necessary, you may slightly rotate the scope tube to plumb the crosshairs with the rifle.

K. External Windage Adjustment

The front Scope Ring (J), includes the **External Windage Adjustment** (K) for use in the event you cannot zero your windage adjustment with the Windage Turret (F). External Windage Adjustment provides an additional 40 MOA adjustment to the left and to the right.

Ranging Modes

Auto/Range™ Mode

Automatically compensates for bullet trajectory, and occurs when:

- A. The two pins on the Range Ring (B) are connected with the Calibration Ring (C)
- B. The thumbscrew on the Calibration Ring (C) is tightened
- C. The thumb tab on the Calibration Ring (C) and thumb tab on the Range Ring (B) are touching



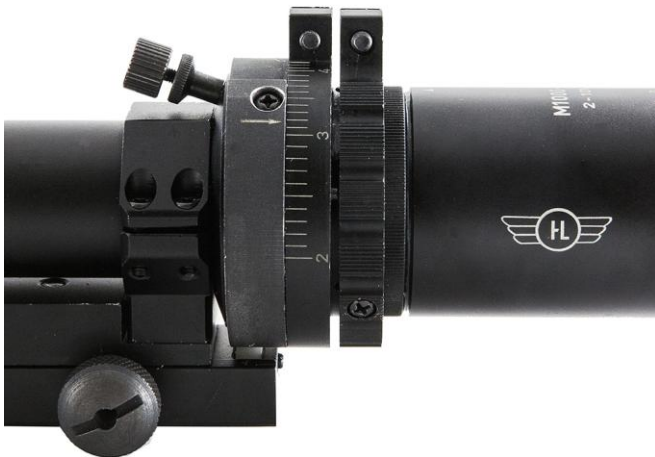
Auto/ Range™ Mode allows the M1000 PRO to automatically compensate for bullet drop at all ranges shown on the Range Ring (B). In the **Auto/ Range™ Mode**, HR-1 MOA Reticle is used to "range" the target.

Manual Mode

Does not automatically compensate for the bullet's trajectory, and allows the use of variable power without engaging the Trajectory Cam (D). Manual Mode occurs when:

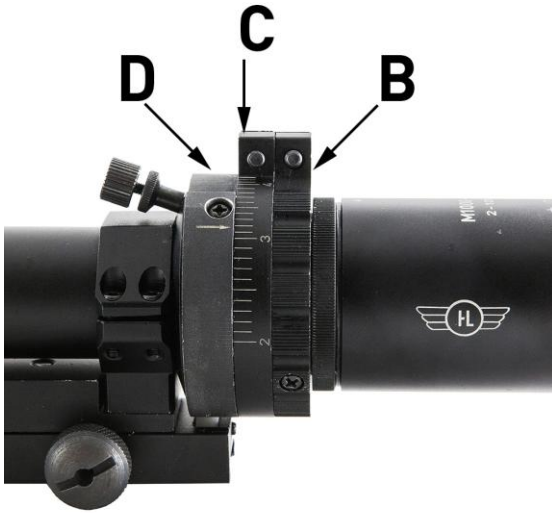
- A. The locking screw on the Range Ring (B) is loosened by several turns
- B. The Range Ring (B) is pulled back towards the eyepiece
- C. The Calibration Ring (C) and Trajectory Cam (D) have been separated from the Power Ring (B).

Since the Calibration Ring (C) now operates independently of the magnification function of the Power Ring (B) range must be set manually. To use this mode effectively, you must know the range to your target



Setting The Trajectory Cam for Commercial Loads

After selecting your load of commercial ammunition, set the Trajectory Cam to match this load.



- A. Find the code number of your load on the M1000-PRO Standard Cartridge Chart on page 21. If your cartridge is not listed, refer to **Setting The Trajectory Cam for Custom Loads** in the next section.
- B. Loosen the thumbscrew slightly on the Calibration Ring (C) and free of the Calibration Ring from the Trajectory Cam (D).
- C. Rotate the Calibration Ring (C) until the small arrow on the Trajectory Cam (D) matches code number of your load on the Calibration Ring (C).
- D. Re-tighten the thumbscrew on the Calibration Ring (C).
- E. Push the two pins on the Range Ring (B) firmly into the Calibration Ring (C). Make sure that the thumb tabs on the Calibration Ring (C) and Range Ring (B) align.

Do not loosen the screw on the Trajectory Cam (D). This is a guide screw used to replace the Trajectory Cam (D).

Setting The Trajectory Cam for Custom Loads

Using the **M1000-PRO Trajectory Cam Setting Chart and the M1000-PRO Standard Cartridge Chart**, compare the bullet path of your load to the **Trajectory Cam** setting drop data using information from ammunition manufacturers' websites, a ballistics calculator or the DOPE (data of previous engagement) data in your rifle log book.

- A. Determine the maximum effective range or longest distance that you will be using
- B. Using a 200 yard zero, compare the DOPE data of your rifle or the ballistics data computed with a ballistic calculator with the M1000-PRO Trajectory Cam Setting Chart
- C. Find the setting that is closest for the distances at and below the maximum effective range that you will use

Set the Trajectory Cam (D) using the Setting The Trajectory Cam for Commercial Loads instructions above.

Mounting The M1000-PRO

The M1000-PRO will mount to any picatinny or weaver rail.

- A. Loosen the two thumbnuts and clamps on the left side of the mount.
- B. Place the scope on the picatinny rail so that the front recoil bar is set within in a groove in the picatinny or weaver rail.
- C. Tighten the thumbnuts securely with finger pressure only. **DO NOT USE PLIERS!** Use of pliers or other tools may deform the base.

Zeroing The M1000-PRO

- A. Align and tighten the thumbscrews on the Range Ring (B) and the Calibration Ring (C).
- B. Set the Trajectory Cam (D) in the lowest position. If you are using Auto/Range™Mode, turn the Range Ring (B) all the way to the right so that the numerals 2 and 200 are on top.
- C. Set up a target at 200 yards and zero the scope by using the center crosshairs and the elevation and windage adjustments in the usual manner.
- D. When the rifle is shooting "dead-on" at the point of aim at 200 yards, it is properly zeroed in and ready for use.
- E. Re-index the elevation and windage turrets to your new zero by loosening the 3 Allen screws on the sides of the each turret. Gently rotate each the turret so that the 0 on the turret lines up with the adjustment index. **Make sure that you do not hear or feel any clicks when rotating the turret.** Tighten the 3 Allen screws to lock each turret in place.

If you cannot zero your windage adjustment with the Windage Turret (F), the External Windage Adjustment provides an additional 40 MOA adjustment to the left and to the right.

Please remember that if you need to move your point of impact to the left, move the external adjustment to the right. If you need to move your point of impact to the right, move the external adjustment to the left.

- A. Loosen the two **big** Allen screws under the front and rear rings.
- B. There are two **small** Allen screws on each side of the front ring.
 - a. To move the point of impact to the right, loosen the Allen screw on the right side of the front ring and tighten the Allen screw on the left side of the front ring.
 - b. To move the point of impact to the left, loosen the Allen screw on the left side of the front ring and tighten the Allen screw on the right side of the front ring.
 - c. Adjust until you have made the necessary windage adjustments.



- C. Re-tighten the two big Allen screws under both front and rear rings and make sure the front and rear rings are parallel.
- D. Confirm that the two Allen screws on each side of the front ring are fully tightened.

Do not loosen the 8 screws on top of the rings when you do the external windage adjustment.

Zeroing The M1000-PRO at Close Distance

- A. If you only have access to a 100-yard range, sight the M1000-PRO at 100 yards or closer distances using your DOPE data or a ballistic calculator to determine how high above the 200 yard point of impact you will need to zero.
- B. Once you have zeroed at a close distance, verify the zero at 200 yards and make the appropriate elevation and windage adjustments.

Using the HR1 Reticle

Known Distance

If you know the distance to your target, turn the Range Ring (B) to the distance of the target in **Auto/Range™Mode**.

The Trajectory Cam (D) will automatically compensate for bullet drop.

Unknown Distance

If you do not know the distance to your target and there is a known sized reference on or near the target, you can frame the reference and the Trajectory Cam (D) will automatically compensate for bullet drop.

How to Frame a Target

- A. Locate the target in the M1000-PRO's field of view and overlay the appropriate framing mark onto the target
- B. Adjust the Range Ring (B) until the framing marks in the HR1 reticle frames all or part of the target
- C. Center of the crosshairs of the HR1 reticle on the intended point of impact and fire

With very little practice, this procedure becomes one fluid motion...Frame, Aim and Shoot!

Framing with the center opening of the HR1 reticle

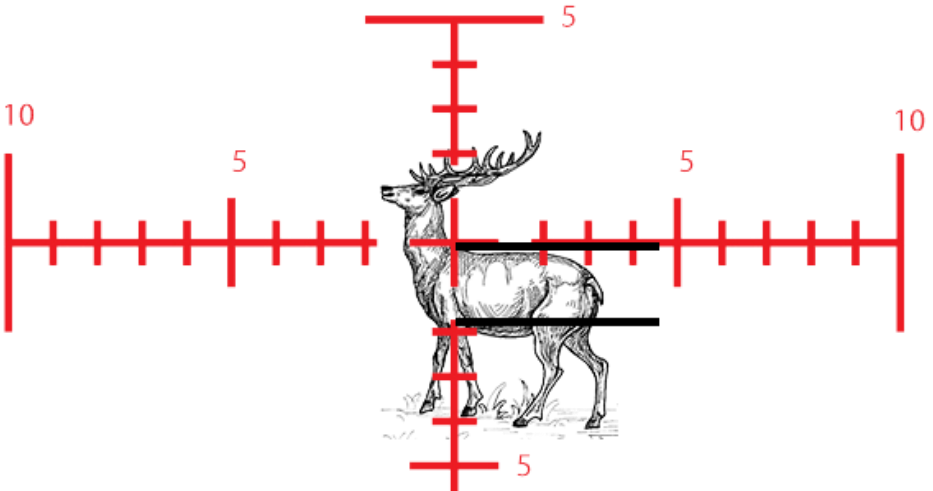
Example 1: You see an adult buck at an unknown distance. You know that the chest cavity “kill zone” height just behind the front shoulder is about 18”.

The center opening of the HR1 reticle frames a known sized target of 36”.

To frame an 18” target, use half of the opening in the reticle center.

The space from the center crosshair to the tip of the vertical axes frames this 18” tall target

Adjust the Range Ring (B) until the vertical framing marks of the HR1 reticle frames this area:



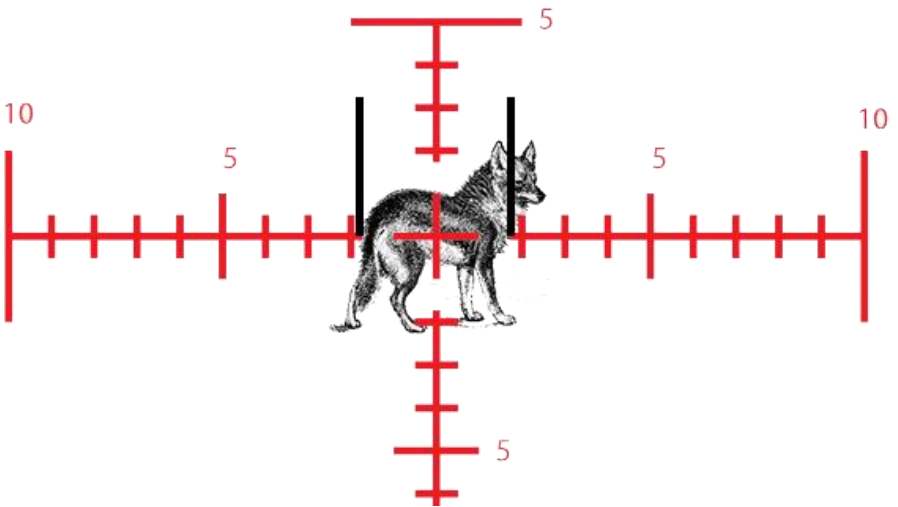
Example 2: You see a coyote at an unknown distance. You know that the average length of an adult coyote is about 36".

The center opening of the reticle frames a known sized target of 36".

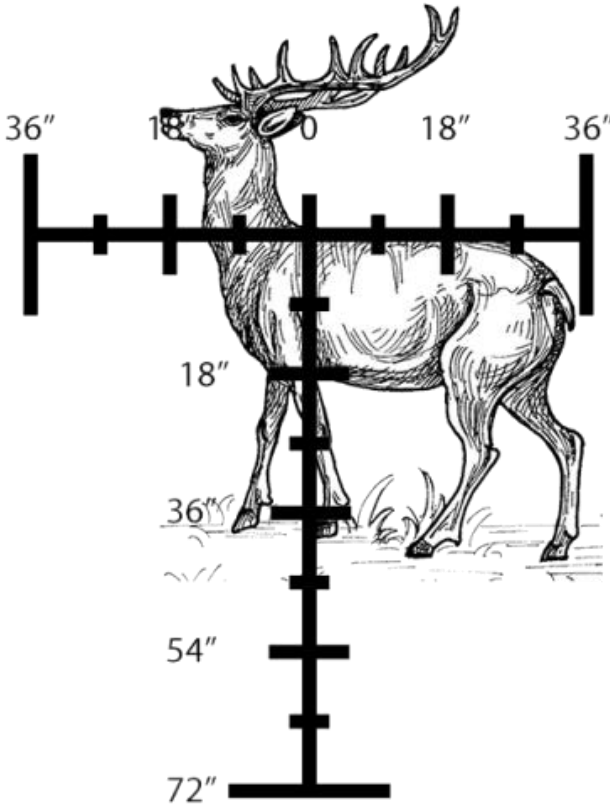
To frame a 36" target, use the whole opening in the reticle center.

The space the tip of one the horizontal framing mark to tip of the other horizontal framing mark frames this 36" long target.

Adjust the Range Ring (B) until the horizontal framing marks of the MR1 reticle frames this area:



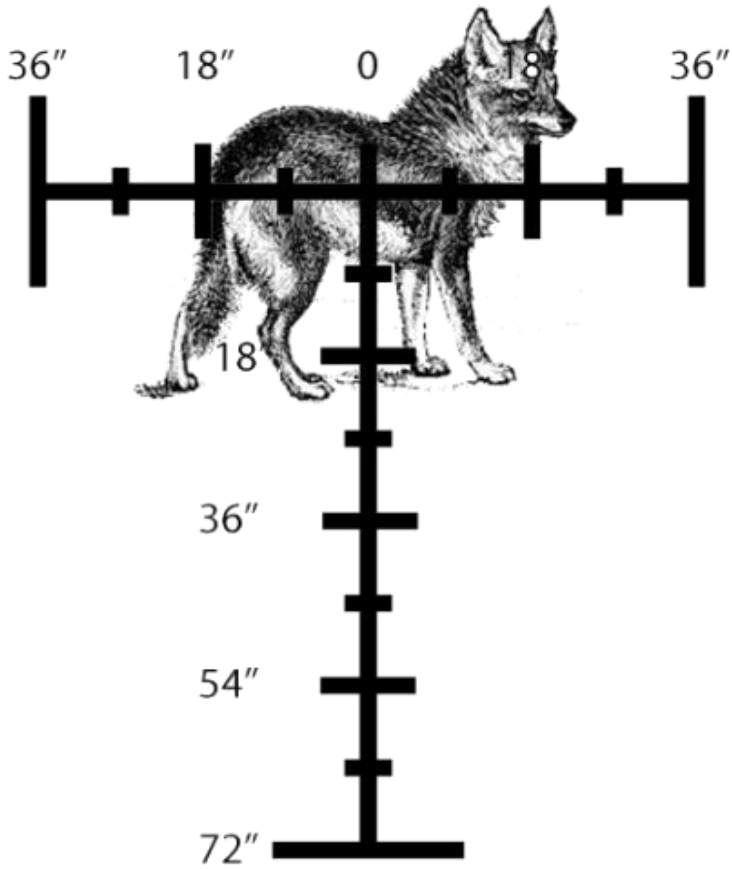
Framing with the ranging scale of the HR1 reticle



You can also use the ranging scale to frame the 18" chest cavity of the average buck.

Overlay the target on horizontal and vertical ranging scales.

Adjust the Range Ring (B) until the horizontal and vertical dimensions of the target matches the known size of the target in the ranging scale.

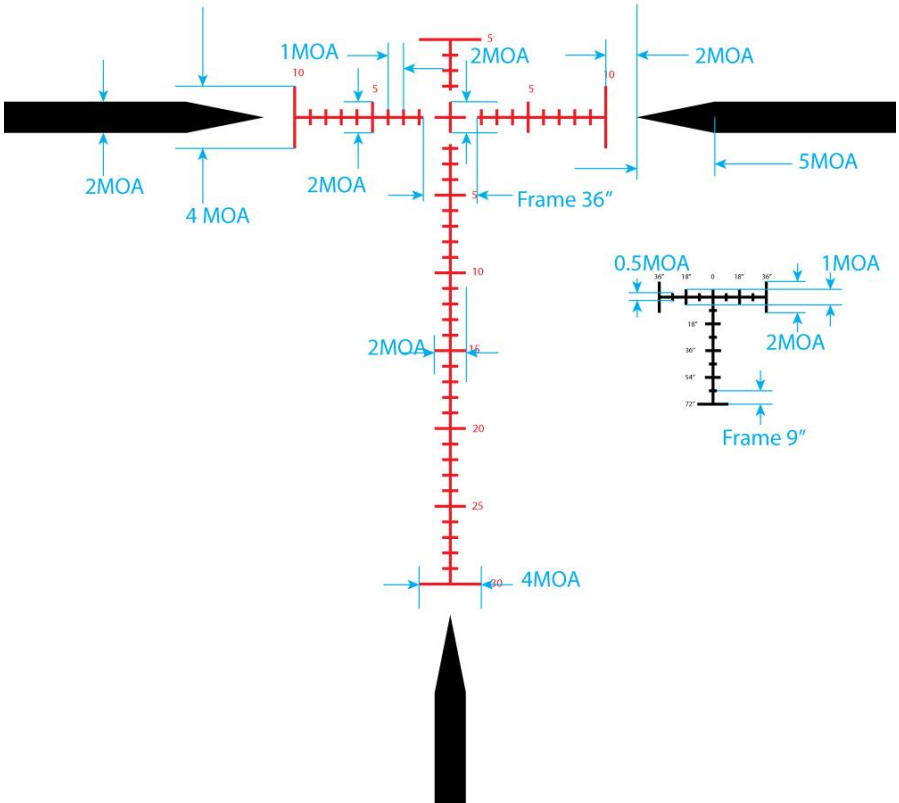


You can also use the ranging scale to frame the 36" length of the average coyote.

Overlay the target on horizontal ranging scale.

Adjust the Range Ring (B) until the horizontal dimensions of the target matches the known size of the target in the ranging scale.

HR1 Reticle Subtensions



The center of the HR1 reticle has a 2 MOA by 2 MOA cross. The opening in the center of the reticle is used to frame and range a known size 36" target.

Every hashmark on the vertical or horizontal scales indicate a whole MOA subtension.

There is a longer 2 MOA tick-mark to indicate multiples of 5 MOA on both the horizontal and vertical scale.

The ends of the axes are indicated by a 4 MOA tick-mark.

There is a ranging scale in the lower right quadrant that can be used to frame and range known sized targets from 9" – 72" in length or height.

Fine Tuning the M1000-PRO

Using this process to fine tune the M1000-PRO, you will set the point of impact within about one or two minutes of angle of the point of aim at all ranges.

- A. Engage the Auto-Range mode and zero the M1000-PRO "dead-on" at 200 yards.
- B. Determine the maximum effective distance that you will be using. Set up one or more 18" targets at multiple distances past 200 yards out to your maximum effective distance. If possible, set up 18" targets at 200, 300, 400, 500, 600, 700, 800, 900 and 1000 yards.
- C. Range the scope in on the first 18" target and fire a group of three rounds.
- D. If the point of impact does not match the point of aim at the longer ranges, do the following:

If you are shooting low you will adjust the cam setting **lower by 10-20 settings (1-2 hashmarks)**.

Loosen the thumbscrew on the Calibration Ring (C) and turn the Calibration Ring counterclockwise until the arrow on the Trajectory Cam (D) points to the desired lower cam setting. Then, tighten the thumbscrew on the Calibration Ring (C).

If you are shooting high, you will adjust the cam setting **higher by 10-20 settings (1-2 hashmarks)**.

Loosen the thumbscrew on the Calibration Ring (C) and turn the Calibration Ring clockwise until the indicating arrow on the Trajectory Cam (D) points to the desired higher cam setting. Then tighten the thumbscrew on the Calibration Ring (C).

M1000-PRO Trajectory Cam Setting Chart

Drop Is In MOA

Range (yd) Cam Setting	200 (yd)	300 (yd)	400 (yd)	500 (yd)	600 (yd)	700 (yd)	800 (yd)	900 (yd)	1000 (yd)
200	0	-6	-12	-20	-27.5	-37.8	-48	-55.8	-61
210	0	-6	-12	-19	-28	-37	-46	-54.8	-60
220	0	-6	-11.8	-19	-27	-37	-45	-53.6	-60
230	0	-6	-12	-18	-24.5	-34	-43	-51.5	-59
240	0	-5.5	-11.5	-16	-23	-32	-41	-49	-58
250	0	-5	-11	-15.3	-21.2	-29.3	-39	-48	-55.5
260	0	-5	-11	-15	-19.3	-27.5	-36	-44	-53.5
270	0	-5	-10.5	-15	-19	-26.7	-35.4	-43	-51
280	0	-5	-9.4	-14	-18	-24	-32.8	-40.5	-49
290	0	-5	-9	-14	-17	-22.5	-30.5	-37.5	-46
300	0	-4.5	-8.8	-13	-16.5	-21	-28	-35	-44
310	0	-4	-8.6	-13	-16.3	-20.5	-27	-34.8	-42.5
320	0	-4	-8.5	-12.7	-15.7	-20	-26	-33	-41
330	0	-3	-8	-12	-15.5	-18.2	-24	-31.5	-39.5
340	0	-3	-7.5	-11	-15	-18.3	-23.2	-30.5	-38
350	0	-2.8	-7.5	-11	-14.5	-18	-23	-29.3	-36.5
360	0	-2.7	-7	-10.5	-14.5	-18	-22	-28	-35.5
370	0	-2.7	-7	-10.5	-14	-17	-21	-25.6	-33.5
380	0	-2.6	-7	-9.8	-13.2	-16.5	-20	-24.8	-32
390	0	-2	-6.5	-9.4	-12.8	-16	-19	-23.5	-30.5
400	0	-2	-6.5	-9.4	-12	-15	-18.4	-22.6	-29
410	0	-2	-6	-9	-11.5	-14.8	-18.2	-21.5	-28
420	0	-1.5	-5	-8	-10.5	-14	-17	-20	-25.5
430	0	-1	-5	-7.8	-10	-13.2	-17	-19.5	-24.5
440	0	-1	-4.8	-7.3	-10	-13.2	-16.5	-19.5	-24
450	0	-1	-4	-7.3	-10	-13	-16	-19	-23.3
460	0	-1	-4	-7.2	-10	-13	-16	-18.6	-23
470	0	-1	-4	-7	-9.8	-12.5	-15.5	-18.5	-22.5
480	0	-0.8	-4	-7	-9.5	-12	-15	-18	-21.5
490	0	-0.8	-4	-7	-9.5	-12	-15	-18	-21
500	0	-0.8	-4	-7	-9.5	-12	-15	-18	-20.8
510	0	-1	-3.5	-6.8	-9	-11.5	-15	-17.5	-20.5
520	0	-1	-3	-6.5	-9	-11.5	-15.3	-17.5	-20.5
530	0	-1	-3.5	-6.8	-9.2	-11.7	-15	-17.5	-20.5
540	0	-1.5	-4	-7	-9.2	-11.8	-14.5	-17.5	-20

550	0	-1.5	-4	-6.8	-9.2	-12	-14.5	-17.5	-20
560	0	-1.5	-4	-7	-9.2	-12	-14.5	-17.5	-20.2
570	0	-1.5	-4	-6.5	-9.2	-11.5	-14.2	-17	-20
580	0	-2	-4	-6.5	-9.2	-11.5	-14	-17	-19.8
590	0	-2	-4	-6.2	-9.2	-11.5	-14	-17	-19.5
600	0	-2	-4	-6.5	-9.5	-11.5	-13	-16	-18.5
610	0	-2	-4	-6.2	-9	-11	-13	-16.5	-19
620	0	-2	-4	-6	-9	-10.7	-13	-16	-18.5
630	0	-2	-3.8	-6	-8.2	-10.5	-13	-15.5	-18.2
640	0	-2	-3.6	-5.8	-8	-10.5	-12.5	-15	-18
650	0	-2	-3.5	-5.8	-8	-10.5	-12.5	-15	-18
660	0	-2	-3.4	-5.6	-7.5	-10.5	-12.2	-15	-18
670	0	-2	-3.2	-5.5	-7.5	-10	-12	-14.5	-17.5

The bullet drop in the chart is **MOA** and the range is in yards. The chart indicates the amount of MOA compensation that the M1000-PRO provides for each cam setting.

To determine the correct Trajectory Cam setting for your rifle and load compare your DOPE data (200 yard zero) with the MOA drop chart.

Select the setting that most closely fits your trajectory data.

After setting the Trajectory Cam, zero the rifle at 200 yards and calibrate your setting by following **Fine Tuning the M1000-PRO** instructions above.

M1000-PRO Standard Cartridge Chart

The following calibers were determined by actual test firings. If your caliber and bullet weight is not listed, use **M1000-PRO Trajectory Cam Setting Chart above** to determine the correct Trajectory Cam setting for your load.

Caliber	B.C. /M.V.	100Y	200Y	300Y	400Y	500Y	600Y	700Y	800Y	900Y	1000Y	Cam Setting
55gr .223	.255 / 3240	+1.3	0	2.2	5.1	8.8	13.5	19.4	26.9	36.2	47.1	380
62gr .223*	.304 / 3000	+1.7	0	2.5	5.5	9.3	13.8	19.4	26.3	34.5	44.3	380
77gr .223	.372 / 2750	+2.0	0	2.8	6.1	10.1	14.7	20.1	26.6	34.1	42.9	390
103gr .243	.512 / 3050	+1.3	0	2.0	4.3	6.9	9.8	13.1	16.7	20.7	25.3	450
123gr 6.5 Grendel	.506 / 2580	+2.2	0	2.9	6.3	10.1	14.4	19.2	24.6	30.8	37.6	340
140gr 6.5 Creedmoor	.580 / 2700	+1.8	0	2.5	5.5	8.7	12.3	16.2	20.6	25.4	30.8	390
143gr 6.5 Creedmoor	.620 / 2700	+1.8	0	2.5	5.4	8.5	12.0	15.8	19.9	24.5	29.6	410
130gr .270	.409 / 3060	+1.4	0	2.1	4.6	7.5	10.8	14.7	19.1	24.3	30.3	420
150gr .270	.462 / 2840	+1.7	0	2.4	5.2	8.4	12.1	16.2	20.9	26.3	32.4	390
139gr 7mm	.486 / 3100	+1.3	0	1.9	4.2	6.8	9.7	12.9	16.6	20.7	25.3	430
160gr 30-30	.330 / 2400	+3.0	0	4.0	8.9	14.8	21.9	30.4	40.3	51.7	64.6	270
168gr .308	.475 / 2700	+1.9	0	2.7	6.0	9.7	13.9	18.7	24.3	30.7	38.0	360
175gr .308	.505 / 2600	+2.2	0	2.9	6.2	9.9	14.2	18.9	24.2	30.3	37.0	370
150gr 30-06	.415 / 3000	+1.5	0	2.2	4.8	7.8	11.3	15.2	19.8	25.2	31.3	390
165gr 30-06	.447 / 2960	+1.5	0	2.2	4.8	7.8	11.2	15.0	19.4	24.5	30.2	390
168gr 30-06	.473 / 2800	+1.8	0	2.5	5.3	8.6	12.3	16.5	21.3	26.7	32.8	400
180gr 300 Win Mag	.480 / 3130	+1.3	0	1.9	4.1	6.7	9.5	12.7	16.3	20.4	25.0	430
250gr .338 Win Mag	.473 / 2660	+2.1	0	2.8	6.0	9.7	13.9	18.6	24.0	30.1	37.0	350
300gr .338 Lapua Mag	.8 / 2650	+1.9	0	2.5	5.3	8.3	11.5	15.0	18.8	22.8	27.1	400
750gr 50bmg	1.050 / 2820	+1.5	0	2.1	4.4	6.9	9.5	12.2	15.1	18.2	21.4	470

LIMITED LIFETIME WARRANTY

Hi-Lux, Inc. warrants its products against defects arising from faulty workmanship, or materials, for the lifetime of the product. Any attempt to alter, dismantle or change the standard specifications of the products, will make this warranty null and void. This warranty is made to the **original purchaser** of the goods, and applies only to the products purchased in the United States. The warranty is transferable. Warranty obligation is limited to the repair or replacement of any product returned to **Hi-Lux, Inc. that is determined by the manufacturer to have defects arising from faulty workmanship** or materials that adversely affect the satisfactory operation of the product. It should be noted that on items containing an etched glass reticle that the occasional appearance of some small particles is common and not a warrantable repair. We have a one-year warrantee for the electronic components that are contained on the products. **Hi-Lux, Inc.** reserves the right to request proof of purchase and purchase date. To guarantee warranty service, the enclosed warranty form must be completed and returned within ten (10) days of purchase to establish all warranty rights between you, the original purchaser, and **Hi-Lux, Inc.** We assume no liability for any incidental or consequential damages, or incidental expenses. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusion may not apply to you. No warranties are made, or are authorized to be made, other than those expressly contained herein. To file a claim under this warranty, please contact the Customer Service Department of **Hi-Lux, Inc.** at (310) 257-8142 to obtain a Return Authorization number (RA number). After receiving your RA number, please mark the number on the outside of the package; enclose the defective item with a brief explanation of the problem. Please be sure to include your name, address and phone number. Failure to obtain a RA number may result in either refusal upon delivery, or lengthy delays for warranty repairs and service required for the item returned to us. All returns are to be shipped prepaid direct to **Hi-Lux, Inc.** including a check or money order in the amount of \$21 to cover postage and handling.

Attn.: Warranty & Service Dept.

Hi-Lux, Inc.

3135 Kashiwa Street

Torrance, CA 90505

Tel: (310) 257-8142, Fax: (310) 257-8096

E-Mail: service@hi-luxoptics.com

www.hi-luxoptics.com

In the event of a non-warranty repair, you will receive an estimate prior to any work being done. This warranty gives you specific legal rights and you may have other rights, which vary from state to state. As defined by federal law, this is a limited warranty.

SPECIFICATIONS

M1000-PRO

Power: 2 to 10X

Length: 12 in.

Eye relief: approx. 3.5 in.

Mounting: Weaver or Picatinny rail

Optics: Fully Multi-coated

Objective: 42mm

Weight: 2.031 lb. (32.50 oz.)

Tube: 30mm Nitrogen filled, shockproof, waterproof

Caliber range: 17 Rem. – 50 cal

Trajectory Correction Range: 200–1000 yards

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