



**OWNERS HANDBOOK FOR
LYNX RIFLESCOPES**

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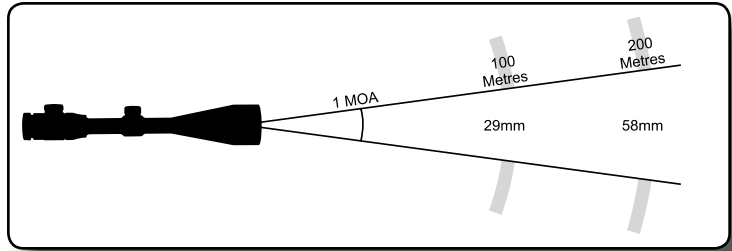
Apart from enabling you to shoot at distances far in excess of those that you could without magnification, a riflescope can improve your shooting performance by eliminating the errors that can be made when your brain superimposes front sight, rear sight and target. Instead of having to focus on three separate objects at different distances a riflescope produces a single composite image with the target and aiming reference (the graticule) in one image plane. Due to the nature of optics, much like your eyes, normal hunting scopes can only focus at one distance: If the target is nearer or farther than the focused distance, parallax (the apparent movement of the graticule in relation to the target) results. High-magnification scopes produce more parallax movement at a given distance than scopes of lower magnification, for this reason “high-magnification” scopes (say those with more than 12x magnification) are usually equipped with parallax adjustment.

Modern riflescopes have windage / elevation controls that move the target image in relation to the graticule in order to allow you to make the bullet impact point coincide with the centre of the graticule. On Lynx riflescopes, each click of the windage / elevation control shifts the point of impact (PI) in the direction indicated by the arrow on the control by 1/4 minute of arc (MOA).

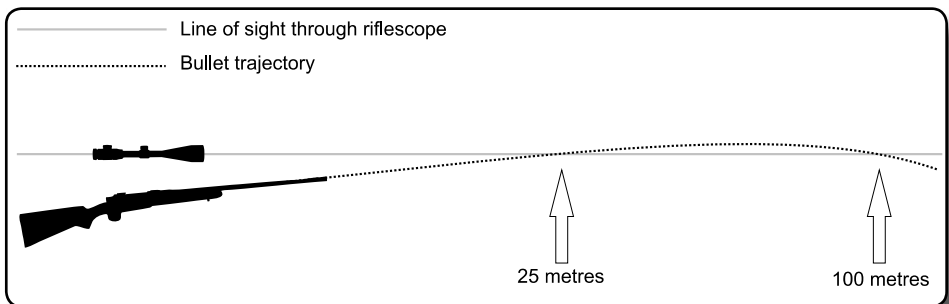
In a circle there are 360 degrees, each of which is divided into 60 minutes of arc, thus there are 21600 MOA in a circle. Using the formula $2 \times \pi \times r$ to calculate the circumference of a circle, it can be determined that a circle with a radius of 100 metres has a circumference of 628.3 metres. Divide 628.3 by 21600 to determine the number of millimetres per MOA and you get 29mm, so for each four clicks of adjustment on the windage / elevation control the PI will shift by 1 MOA, which equals 29mm at 100m. Because the PI adjustment is measured in angles, the amount of movement on the target will increase proportionally as the distance to the target increases. In the following table, each click has been rounded down to 7mm for simplicity.

	DISTANCE TO TARGET			
	100M	200M	300M	400M
1 MOA	29mm	58mm	87mm	116mm
1 Click (1/4 MOA)	7mm	14mm	21mm	28mm

If you are using the imperial system of inches, feet and yards, note that 1 MOA equals 1 inch at 100 yards and each click equals 1/4 inch at 100 yards,



When a riflescope is mounted on a rifle the line of sight through the scope must be made to intersect with the path of the bullet. From the moment the bullet leaves the muzzle, it begins to fall toward the ground at the same velocity as it would if it were dropped from your hand, but because the bullet has forward velocity as well it travels a predictable distance before coming into contact with the ground. The higher the muzzle velocity, the farther the bullet will travel for any given amount of drop. As the bullet travels through the air, it is acted upon by friction (air resistance) that slows the bullet down; the further the bullet travels the more friction affects it and the slower it goes, this causes the bullet to travel in an elliptical trajectory rather than a straight line. Since the bullet leaves the muzzle below the line of sight of the riflescope, the scope must be adjusted so that the line of sight points downward in order to intersect with the bullet's trajectory, and because the trajectory is elliptical, the line of sight will intersect twice; if the scope is zeroed at 100 metres then the line of sight will intersect at 100 metres and at 25 metres. As you will later see, this phenomenon can be exploited to the shooter's advantage when zeroing the scope.





CHOOSING A MOUNTING SYSTEM

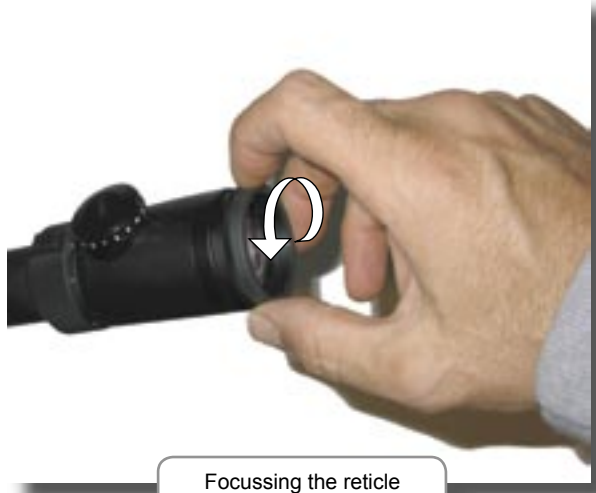
Your choice of mounts is as important to accurate shooting as your choice of rifle and scope. We recommend that you choose a mounting system that will withstand the recoil forces generated by your rifle for many years without wear or failure. Lynx rings are precision machined from a single block of steel to provide full

radius contact with the scope tube and thus excellent grip without squeezing the tube out of round. Lynx base blocks are precision machined from steel to precisely fit the action of your rifle. The rings are held by both front and rear bases sharing the recoil forces evenly, unlike rotary dovetail systems where the front ring takes all the recoil. Most Lynx mounts have windage adjustment capability that can overcome mounting difficulties caused by mounting holes drilled out of alignment with the bore.

BEFORE MOUNTING THE SCOPE

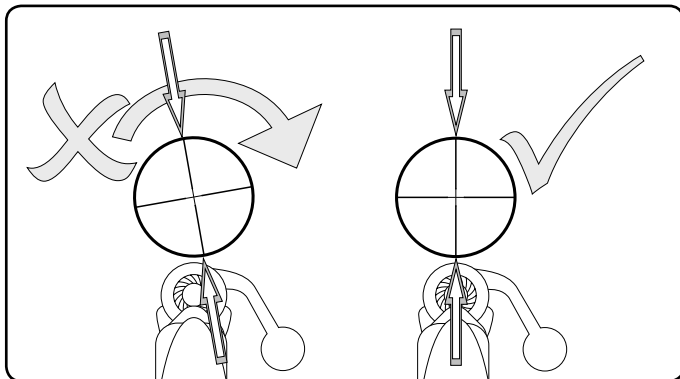
Lynx riflescopes are factory set for shooters with 20/20 vision. In order to give you the best image and to prevent eye fatigue when shooting for long periods of time, the first thing to do is to focus the scope for your eyes. As you may remember the scope superimposes the target onto the graticule in order to give you one image at which to aim, so the best way to focus the scope is bring the graticule into sharp focus (and thereby bringing the image into sharp focus) while your eyes are relaxed. You would find that if you tried to focus the image instead of the graticule, you would have to focus through the scope at an object

100 metres away and it would be far more difficult to be sure that the image is sharp and your eyes relaxed. Begin by turning the eye bell of the scope anti-clockwise until it stops, then look through the scope at a well lit featureless area such as a nearby wall or cloudless sky—remember that the object of the exercise is to see nothing but the graticule through the scope—you should see a



Focussing the reticle

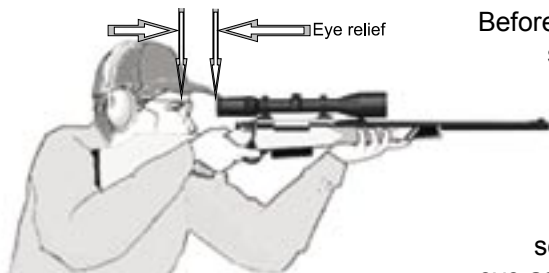
very unsharp graticule. Now without looking through the scope, give the eye bell a couple of clockwise turns at a time. After each adjustment look away from the scope or close your eyes for a moment to relax them and prevent them from bringing the graticule into focus prematurely. This action should be repeated until the graticule immediately appears crisp and sharp at a quick glance. It may be necessary to check and re-adjust the focus if the scope is being used by another person or if your eyesight undergoes significant change.



MOUNTING THE SCOPE

Consult the instructions that come with your mounts for any information peculiar to them. Make sure that all the mounting holes and surfaces on the rifle, mounts and rings are free from dirt or grease by cleaning them with oil-free acetone or a similar solvent. If necessary nail polish or a weak grade of Loctite® can be used on the base-to-action screws to prevent them from working loose. Before tightening the rings, be sure to set the correct eye relief for your scope (see next section) and align the scope so that the graticule is squarely aligned to the rifle. Leave at least a 2mm gap between the rings and scope tube contours.

SETTING CORRECT EYE-RELIEF



Before tightening the rings, slide the scope backward or forward until you see the full field of view through the scope whilst holding the weapon in a normal shooting manner. The eye lens of the scope should be as far from your eye as possible whilst still giving a full field of view. Note that variable magnification

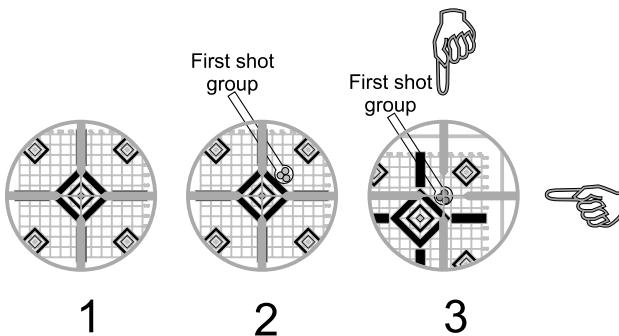
riflescopes have the shortest eye-relief at the highest power: Always set the scope to it's maximum magnification setting when adjusting for eye-relief.

PRE-SIGHTING THE SCOPE

If the mounts that were used to secure the scope to the weapon have built-in windage / elevation adjustments like the LYNX system, it is vitally important that the pre-sighting adjustments be carried out on the mounts in order to align the scope's external tube to the weapon's bore. Failure to do so may result in damage to the internal mechanism of the scope. Pre-sighting will save ammunition, time and frustration. The following two methods are listed in order of ease and accuracy:

Using a collimator: If you have access to a collimator (also known as a bore-sighter), this is probably the quickest and easiest method of pre-sighting the scope. The collimator is clamped to an arbour that is inserted into the barrel of the rifle and emits a grid pattern that appears to be at infinity. Using first the adjustment on the mounts (if available) then the adjustments on the scope, align the graticule with the centre of the grid pattern emitted by the collimator, this should put your first shot on the paper of your target.

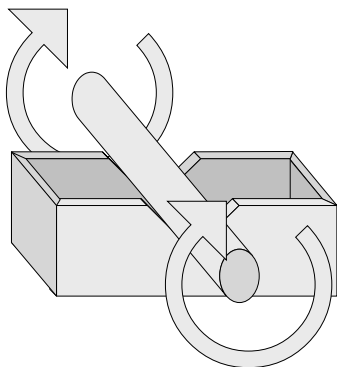
Boresighting: Boresighting requires no special tools or instruments to perform. Place the rifle on a sand bag or a similar steady rest and sight through the barrel by removing the bolt from the action. Move the rifle until you can see an object at least 25 metres away. Without moving the rifle adjust the graticule until it is centred on the same object. Use the adjustments on the scope mounts before those of the scope itself. For lever action and other rifles that do not allow you to look down the bore, a small mirror such as a dentist's mirror can be used to sight through the bore.



ZEROING THE SCOPE

Before firing any rounds through the weapon, make sure that all mount and rings' screws are tight, it is also good practice to tighten the screws after shooting a few rounds to make sure they bed properly. The distance at which you zero the scope depends on the distance at which you will be doing most of your shooting; the final zeroing should not be done at less than 100 metres

(and at the highest power setting on variable power scopes). Aiming through the scope, fire a three shot group at the centre of a target at 25 metres using a bench rest or sand bag to assist your aim. Keeping the weapon aimed in that exact position, look through the scope and turn the windage / elevation controls to place the graticule over the centre of the three shot group. Depending on the distance at which most of your shooting will take place, fire a three shot group at the centre of a target at 100 or 200 metres. Using the windage / elevation controls, move the point of aim the required direction and distance. Remember that each click will move the bullet impact in the direction indicated by the arrow on the control by 1/4 MOA: 7mm at 100 metres and 14mm 200 metres..



RE-CENTERING THE GRATICULE

The graticules in all Lynx scopes are optically centred before leaving the factory, but after zeroing a scope using the windage / elevation controls, you cannot be sure how close it is to centre. This can be a problem if you want to re-mount the scope on another rifle or change the mounting system on your existing rifle. The best way to make sure that the graticule is optically centred without special equipment is to do the following: Turn the windage / elevation controls anti-clockwise until they stop. Turn the elevation control clockwise all the way, counting the number of revolutions, and turn it all the way out again. Turn the windage control clockwise all the way, counting the number of revolutions and turn it all the way out again. Finally turn the elevation control clockwise for half the number of revolutions it took to turn it all the way in and do the same with the windage control. You have now set the scope to its mechanical centre. To set it to its optical centre after setting it to its mechanical centre, place the scope in a V-block fashioned from a wooden or cardboard box, and rotate the scope whilst looking through it at a distant object. If the scope is not optically centred, the graticule centre will describe a circle as the scope is rotated. Use the windage / elevation controls to move the graticule until the graticule centre remains stationary.

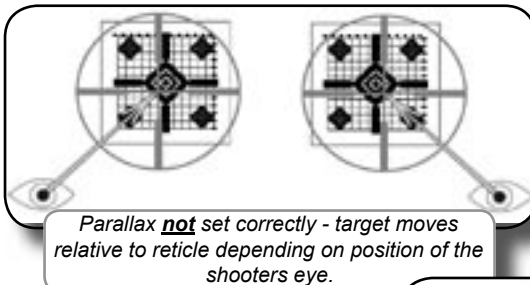
MAINTENANCE

Both the objective and eye lens should be kept clean at all times, the dust caps will keep dust and other contaminants off the lenses when not in use. To clean the lenses first use a soft brush to remove loose dust, blowing gently on the surface while you brush. To get rid of grease, oil or dirt smudges use a cotton bud dipped in alcohol or glass cleaner and gently wipe dry with a dust free tissue. Keep the windage and elevation caps in place except when using the controls to adjust the scope. Never use the scope as a lever to twist a swing mount into the base when installing the mount for the first time. Damage to scope structure and / or functions may occur. Turning the windage / elevation controls beyond the stage at which resistance is felt may result in damage to the controls or internal elements of the scope. If there is not sufficient adjustment available, please refer to the troubleshooting section of this handbook. Note that the windage and elevation controls are related, the more windage you use the more you limit the elevation movement and vice-versa.

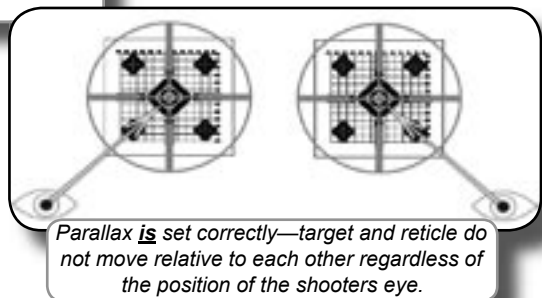
PARALLAX

A riflescope has two focus planes: The plane in which the image is focused and the plane of the graticule.

Some model riflescopes are fitted with an adjustable objective lens or saddle-focus control for parallax correction. In order for parallax correction to be effective, the riflescope should first be correctly



focused for the individual who is using it by following the steps outlined in the paragraph entitled “*Before Mounting the Scope*” above.



ADJUSTABLE OBJECTIVES

Close-focusing models have two-colour distance markings on the parallax distance scale. Matching the white index marking on the scope tube to the white distance markings on the parallax scale is for close-range shooting,



Parallax set for close range shooting.

and is achieved by rotating the objective adjustment all the way out (counter clockwise). Matching the gold / black index marking to the corresponding coloured markings on the parallax scale is for shooting at longer ranges, and is achieved by

rotating the objective adjustment all the way in (clockwise).

Once the riflescope has been correctly focused for the shooter's eye, parallax can be set either by focusing the scope manually or by setting the objective to the desired distance as shown on the parallax scale. To focus the scope manually, sight through the scope at the target and rotate the adjustable objective until the both the image and the graticule are sharply in focus. To use the parallax scale settings, rotate the adjustable objective until the desired range printed on the parallax scale lines up with the index line on the body of the riflescope.



Parallax set for longer range shooting.

Note that changes in temperature and altitude may effect the accuracy of the parallax scale.



SADDLE FOCUS PARALLAX ADJUSTMENT

Lynx saddle focus (SF) parallax adjustable scopes have a focus drum on the saddle opposite the windage control. Once the riflescope has been correctly focused for the shooter's eye, parallax can be eliminated: Sight through the scope at a target and rotate the focus drum until the image is sharply in focus.

The scope is now set parallax free for that target distance. Turning the focus drum toward the larger dots (or smaller distance numbers, depending in the model) will focus on closer targets. Turning the focus drum towards the infinity symbol (∞) will focus on further targets.

WINDAGE AND ELEVATION CONTROLS



LOW PROFILE TURRETS - COIN SLOT TYPE

Remove the cap by rotating anti-clockwise, and use a screw-driver or coin to rotate the control to adjust for windage and elevation. The graduated range scale may be turned to indicate zero position.



LOW PROFILE TURRETS - TOOL-LESS FINGER ADJUSTABLE

Fitted to riflescope models 3P2.5-10x56IR and 3P1.5-6x42IR.

Remove the cap by rotating anti-clockwise, and rotate the control to adjust for windage and elevation. Pulling upward on the control disengages the range scale, and allows it to be rotated independently of the internal mechanism in order to store the zero position. Push downward to re-engage the mechanism—if the control clicks when rotated, the internal mechanism is engaged and the windage / elevation will adjust when the control is rotated.



LOW PROFILE TARGET TURRETS

Remove the cap by rotating anti-clockwise, and rotate the control to adjust for windage and elevation. Loosening the locking grub-screws around the top of the knob disengages the adjustment mechanism from the knob in order to store the zero position. Tightening the screws will re-engage the mechanism—if the control clicks when rotated the internal mechanism is engaged and the windage / elevation will adjust when the control is rotated.



MICROMETER TARGET TURRETS

Although factory fitted to some Lynx riflescope models, micrometer target turrets can be fitted to any Lynx scope that has standard coin slot turrets. Remove the cap by rotating anti-clockwise, and rotate the control to adjust for windage and elevation. When rotating the control, if the control clicks the internal mechanism is engaged and the windage / elevation will respond. Loosening the locking grub-screws around the top of the dial with an allen key disengages the adjustment mechanism from the turret, enabling you to set the graduation to the zero position. Tightening the screws will re-engage the mechanism.

ILLUMINATED RETICLE SCOPES

Some Lynx scopes are equipped with illuminated reticles, which offer a precise aiming point against even the most dimly lit target.

ILLUMINATING THE RETICLE

The brightness setting of the reticle is indicated by numbered markings on the illumination dial located atop the eyepiece of the scope. Illuminate the reticle by rotating the dial to the desired brightness setting: 1 to 11. Illuminate the reticle so it appears bright enough to stand out clearly against the target, but not so bright as to appear to flare inside the scope. The dimmest setting which is clearly visible against the target is usually best. Remember to turn off the illumination when not required in order to preserve battery life. For prolonged storage, remove the battery.

CHANGING THE BATTERY

To change the battery remove the battery cover using a coin, by rotating it anticlockwise whilst holding the sides to prevent the entire dial from turning. Remove the old battery and insert a new battery (**Varta® CR2032** or equivalent) with the positive (+) side up. Replace the battery cover securely to preserve water integrity.

TROUBLESHOOTING

POSSIBLE PROBLEM	SOLUTION
Scope will not zero—lack of windage adjustment	
Rifle mounting holes drilled out of alignment	Re-centre the graticule and re-mount the scope using a mounting system with windage adjustment capability such as Lynx Mounts.
Rifle barrel threaded into receiver ring at an angle	Same as above
Mounts have windage adjustment capability that was not used when zeroing	Re-centre the graticule and re-mount the scope. Be sure to use the windage adjustment on the mounts before using the scopes internal adjustments.
Elevation control turned in all the way limiting windage adjustment	Re-centre the graticule and refer to the <i>Scope will not zero—lack of elevation adjustment section</i> below
Scope tube bent due to being dropped or being misused.	Return scope for tube replacement—not covered by warranty
Scope will not zero—lack of windage adjustment	
Receiver diameter out of spec.	Use a brass shim stock under the front base to lower point of impact or under the front base to raise point of impact.
Rifle barrel threaded into receiver ring at an angle	Same as above
Incorrect height mounts used	Re-center the graticule and use the correct mounts for the rifle.
Windage control turned in all the way limiting elevation adjustment	Re-centre the graticule and refer to the <i>Scope will not zero—lack of windage adjustment section</i> above
Scope tube bent due to being dropped or being misused.	Return scope for tube replacement—not covered by warranty
Scope and rifle shot well in the past. Recent loss of accuracy	
Erosion of barrel or throat.	Consult with gunsmith.
Scope sliding in rings	Tighten or replace rings. Use Loc-tite® retaining compound 603 on ring-to-scope surfaces.
Bedding screw in stock has loosened.	Re-tighten screw

POSSIBLE PROBLEM	SOLUTION
Warped stock—stock coming into contact with barrel.	Consult with gunsmith
Loose mounts	Remove scope and mounts and re-mount scope
Scope faulty	Return scope for repair
Rifle has shot well in the past. Doesn't group well since mounting	
Loose mounts	Remove scope and mounts and re-mount scope
Scope tube touching rifle barrel	Replace rings with higher ones.
Scope faulty	Return scope for repair
Point of impact shifts when changing scope power	
Zeroing was not carried out at high power	Re-zero the scope at high power
Scope faulty	Return scope for repair
Graticule and image not in sharp focus	
Eyepiece not focused for your eyes.	Refer to the section entitled <i>Focusing the scope</i>
Parallax not set correctly	In scopes with parallax adjustment, check the setting on the parallax ring. Return other models for repair.
Grease film on eye lens	Clean lens—refer to the section entitled <i>Maintenance</i> .
Image “milky”—lacks definition	
Grease film on objective lens	Clean lens—refer to the section entitled <i>Maintenance</i> .
Moisture inside scope	Return scope for repair

CUSTOMER SERVICE

If you have any problem with you scope, or are in need of technical advice or assistance, we invite you to contact us.

Lynx Optics (Pty) Ltd
 PO Box 98078, Sloane Park
 South Africa, 2152
 Tel: +27 (0)11 792 6644
 fax: +27 (0)11 792 8923
 visit: www.lynx.co.za
 email: info@lynx.co.za

WARRANTY

LYNX PROFESSIONAL

Lynx professional series riflescopes have a lifetime warranty.

LYNX RIFLESOPES (EXCLUDING PROFESSIONAL MODELS)

Other Lynx riflescopes have a warranty period of 15 years effective from the date of purchase of the scope.

LYNX ELECTRONICS COMPONENTS

All electronic components incorporated into Lynx products, such as illuminated reticle riflescopes and red-dot scopes, are warranted for five years from date of purchase.

LYNX WARRANTY STATEMENT

Lynx products are warranted against original defects in material and / or workmanship provided that the unit has not been abused, taken apart or tampered with in any way whatsoever. The warranty is limited to the original purchaser and is not transferable. The warranty only applies to products purchased in South Africa. Should it become necessary to repair your Lynx product, package the unit carefully and return it to:

The Lynx Service Centre, PO Box 98078, Sloane Park 2152, South Africa.

Include your name, address and telephone number and a note with a full and accurate description of your problem. In the event that the repair is not covered by warranty an estimate will be sent for your approval. Lynx shall not be held liable for any consequential, incidental or contingent damage whatsoever.

IDENTIFYING YOUR SCOPE

Lynx Professional Series scopes are prefixed by the letter "P", Lynx 30mm Professionals are prefixed by "3P". Wide angle models are prefixed "W", and Twilight models "T". The numbers following the Series identification indicate the magnification and the objective lens diameter in millimetres. The suffix letters serve to indicate any number of features the scope may have, such as saddle focus, adjustable objective, target turrets etc. The model number is printed or engraved on the scope in black.

NOTES
