



## **OWNERS HANDBOOK FOR LYNX RIFLESCOPES**

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Printed in South Africa.

Lynx Rifle Scope Owners Manual Revision 2.5  
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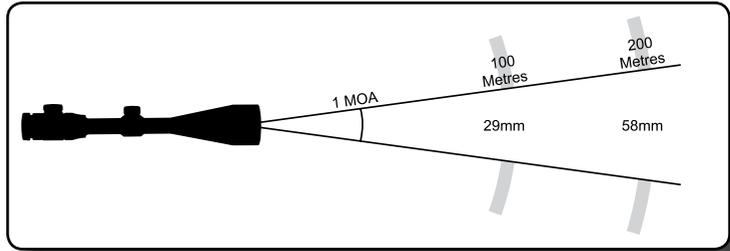
A part from enabling you to shoot at distances far in excess of those that you could without magnification, a riflescope can improve your shooting performance by eliminating the errors that can be made when your brain has to align and superimpose the front sight and rear sight over the target. Instead 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 reticle) 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 reticle 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 reticle in order to allow you to make the bullet impact point coincide with the centre of the reticle. 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).

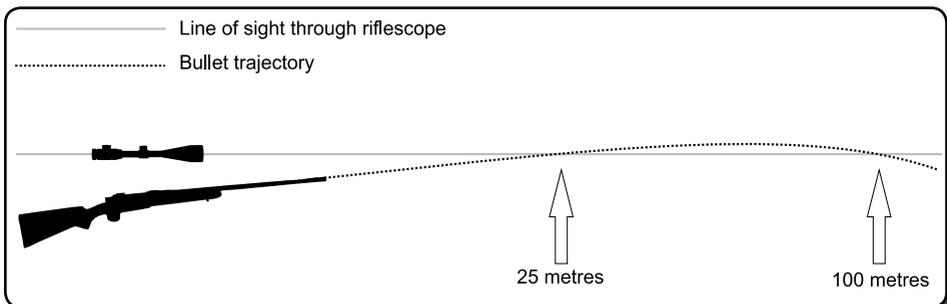
In a circle there are 360 degrees, each of which is divided into 60 minutes of arc, thus there are 21600 MOA in a circle. Using the formula  $2 \times \pi \times r$  to calculate the circumference of a circle, it can be determined that a circle with a radius of 100 metres has a circumference of 628.3 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.

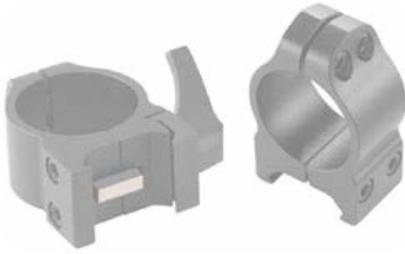
	DISTANCE TO TARGET			
	100M	200M	300M	400M
1 MOA	29mm	58mm	87mm	116mm
1 Click (1/4 MOA)	7mm	14mm	21mm	28mm

If you are using the imperial system of inches, feet and yards, note that 1 MOA is 1 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 provide 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 and the rings are both affixed to the front and rear bases and share the recoil forces evenly unlike rotary dovetail systems where the front ring bears 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.

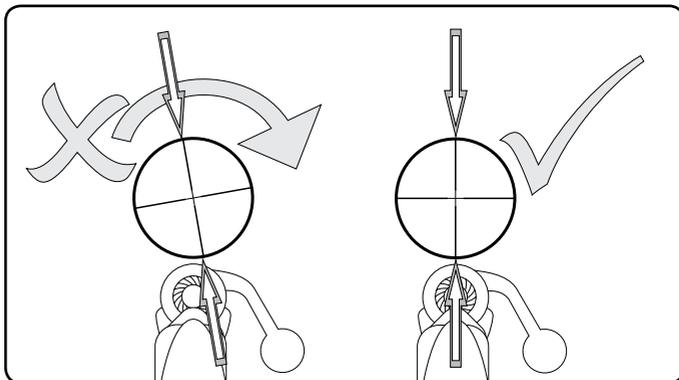
## BEFORE MOUNTING THE SCOPE

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 reticle in order to give you one image at which to aim, so the best way to focus the scope is bring the reticle 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 reticle, 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 reticle through the scope—you should see a very unsharp reticle. Now without



Focussing the reticle

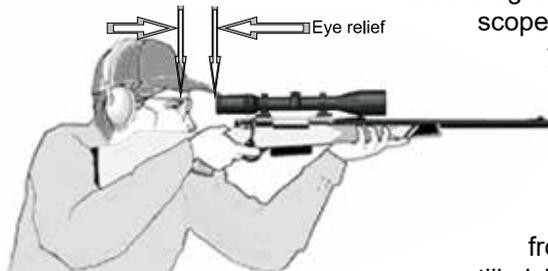
looking through the scope, give the eye bell a couple of clockwise turns, one-half turn at a time. After each adjustment look away from the scope or close your eyes for a moment to relax them and prevent them from bringing the reticle into focus prematurely. This action should be repeated until the reticle 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 reticle 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 usually have the shortest eye-relief at the highest power: Always set the scope to the magnification setting with the shortest eye-relief when adjusting for eye-relief.

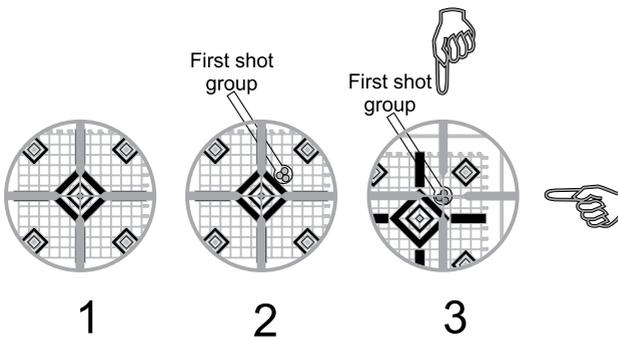
## PRE-SIGHTING THE SCOPE

*If the mounts that were used to secure the scope to the weapon have built-in windage / elevation adjustments like LYNX stud-type scope mounts it is vitally important that the pre-sighting adjustments be carried out on the mounts before using the scope's adjustment controls in order to align the scope tube to the bore of the weapon. Failure to do this may result in damage to the internal mechanism of the scope.*

Pre-sighting the scope 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 reticle with the centre of the collimator grid pattern. 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 centred through the barrel. Without moving the rifle adjust the reticle 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.



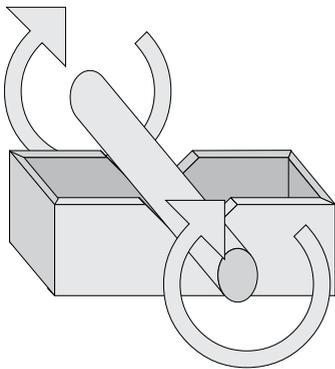
## ZEROING THE SCOPE

Before firing any rounds through the weapon, make sure that all the ring and mount 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. Final zeroing should not be done at less than 100 metres and at the highest power setting on variable power scopes.

1. 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 bring the centre aim point of the reticle over the centre of the three shot group you've just shot.

2. Depending on the distance at which most of your shooting will take place, set up a target at 100 or 200 metres and fire a three shot group aimed at the centre of the target. Use the windage / elevation controls on the scope to move the point of aim the required direction and distance. Remember that in most scopes 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 / 14mm 200 metres).



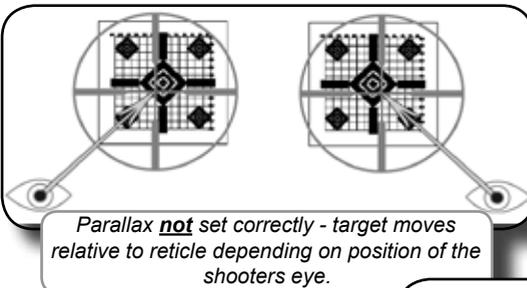
### RECENTERING THE RETICLE

The reticles in Lynx scopes are optically centred before leaving the factory but after adjusting the windage / elevation controls you cannot be sure how close it is to centre. This can be a problem if you want to mount the scope onto another rifle or change the mounting system on your existing rifle. The best way to make sure that the reticle is optically centred without special equipment is to do the following: 1) Turn the windage / elevation controls anti-clockwise until they stop, 2) turn the elevation control clockwise all the way, counting the number of revolutions, and turn it all the way out again, 3) turn the windage control clockwise all the way, counting the number of revolutions and turn it all the way out again, and 4) 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 will have now set the scope to its mechanical centre. To set it to its optical centre after following the above procedure, 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 reticle centre will describe a circle as the scope is rotated. Use the

windage / elevation controls to move the reticle until the reticle centre remains stationary.

## MAINTENANCE

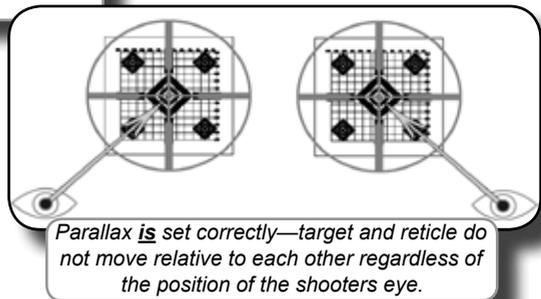
Both the objective and eye lens should be kept clean at all times. Use the dust covers to keep dust and other contaminants off the lenses when the scope is not in use. If the lenses require cleaning first use a soft brush to remove loose dust, blowing gently on the surface while you brush. To get rid of grease, oil or dirt smudges use a cotton bud dipped in alcohol or domestic glass cleaner such as Windolene® 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 less elevation movement may be available and vice-versa.



## PARALLAX

A riflescope has two focus planes: The plane in which the image is focused and the plane where the reticle sits. Some model riflescopes are “fixed-focus”, usually at 100

metres and others 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

Focusable scopes with adjustable objectives have distance markings on the parallax distance scale on the front bell of the scope. Once the riflescope reticle has been correctly focused for the shooter's eye, parallax must be set to the target distance either by focusing the scope manually or by setting the objective to the desired distance as shown on the parallax scale. 1) To focus the scope manually, sight through the scope at the target and rotate the adjustable objective until

both image and reticle are in sharp focus. 2) In order to use the parallax scale to focus the scope, turn the adjustable objective until the distance marking printed on the parallax scale lines up with the index line on the body of the riflescope.

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



## SIDE FOCUS

Some Lynx scopes have the parallax control mounted on the side of the scope, opposite the windage adjustment control. Once the riflescope has been correctly focused for the shooter's eye, parallax can be set manually or by setting the parallax using the distance scale on the control. 1) To focus the scope manually sight through the scope at

the target and turn the focus control until both image and reticle are in sharp focus. 2) To use the parallax distance scale turn the focus control until the desired range printed on the scale lines up with the index line on the body of the scope. Note that Lynx side-focus scopes are intentionally designed to focus beyond infinity ( $\infty$ ).

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

# WINDAGE AND ELEVATION CONTROLS

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## LOW PROFILE TURRETS - COIN SLOT TYPE

Remove the windage / elevation cap by rotating it 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.



## POP-UP CONTROL TURRETS

Remove the windage / elevation 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.



## TARGET TURRETS

Remove the windage / elevation cap by rotating anti-clockwise and rotate the control to adjust for windage and elevation. Loosening the lock thumb-nut atop the control knob and lift the control knob to disengage the adjustment in order to set it to the zero position. If the control clicks when rotated the internal mechanism is engaged and the windage / elevation will adjust when the control is rotated.

# TACTICAL / TARGET TURRETS

*Before setting the windage and elevation control turrets to zero shoot-in your scope as instructed in the section headed “Zeroing your Scope” above.*



## TACTICAL / TARGET TURRETS TYPE 1

**If the control knob on your scope is fastened to the control mechanism with a large flat-topped locking screw set into the top surface of the control then this section applies to you:** Remove the locking screw using the hex wrench provided, lift the control knob off the control body in order to disengage it from the adjustment mechanism and reseal it with the zero indicator of the control aligned to the index mark on the scope tube. Replace the locking screw and tighten it down lightly.



## TACTICAL / TARGET TURRETS TYPE 2

**If the control knob of your scope is attached to the control mechanism with three grub screws spaced evenly around the upper outside knurled surface of the control knob then this section applies to you:** To set the control turret to the zero position after zeroing the rifle, use the hex wrench provided to loosen all three grub screws a half-turn or so in order to disengage the turret dial from the adjustment mechanism. Making sure the turret dial turns freely from the mechanism align the zero indicator on the turret knob with the zero index mark on the scope tube and, being sure not to use too much force, re-tighten all three grub screws evenly and firmly.

*Note: If you feel / hear clicks as you rotate the scope internal adjustment mechanism is engaged with the control knob and the reticle aim point will move accordingly.*

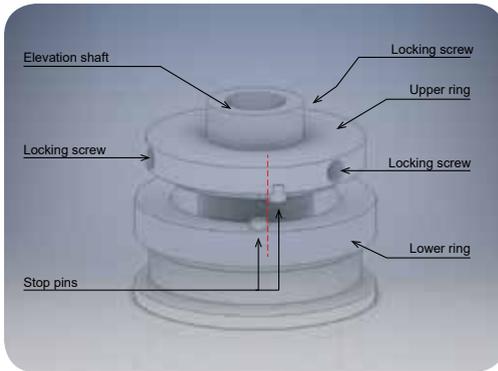
# ZERO STOP

Some Lynx scopes fitted with tactical turrets are equipped with a zero stop function on the elevation control.

Zero stop is a mechanism that may be set to prevent the elevation control from turning beyond any chosen position in the clockwise direction. Once the zero stop is engaged the control can be rotated anticlockwise (which moves the bullet point of impact upward) to the full extent of the scope's adjustment range after. After setting zero stop all subsequent clockwise (bullet impact downward) adjustments will stop precisely at your chosen zero-stop position.

You may choose to set the zero-stop at the dead-centre position on the target, or you may set it at any position below dead-centre in order to accommodate any amount of downward adjustment you decide is appropriate.

To engage the zero stop function, set the elevation point of aim to the desired zero position as you normally would. Once the scope is zeroed remove the elevation control knob by loosening the three grub screws located around the top and pull the control upward. During this process be sure that the control mechanism beneath the elevation dial does not rotate or you may inadvertently lose zero.



After removing the elevation dial as described above, disengage the upper ring of the zero stop mechanism from the elevation shaft by loosening the three locking screws around the edge of the ring with the hex wrench provided. Drop the upper ring down onto the lower ring and rotate the upper ring clockwise until the two stop-pins align (see diagram) and the upper ring is

prevented from rotating any further.

Whilst making sure that the stop screws are touching firmly, carefully and evenly tighten the three locking screws on the upper ring to re-engage the ring to the elevation shaft. Zero-stop is now set.

Replace the elevation dial over the zero stop mechanism. The dial fits snugly with the elevation shaft and a small amount of air may become trapped between them which must be allowed to release slowly, so push the dial down into place slowly and firmly but not with too much force.

Finally, align the elevation-dial zero indicator with the vertical white zero line on the elevation control shaft and tighten the three locking screws around the top of the elevation dial.

# ILLUMINATED RETICLE SCOPES

Some Lynx scopes are equipped with reticles with battery illumination.

## ILLUMINATING THE RETICLE

The illumination control is either mounted on the eyepiece of the scope or on the side of the scope opposite the windage adjustment control. In some cases the switch has a single off-setting (marked 0) and ten or eleven brightness levels. If the illumination switch has no "0" setting, then the illumination turns off between each brightness setting.

The brightness setting of the reticle illumination is indicated by numbered markings on the switch. Set the brightness so that the illuminated portion is bright enough to stand out clearly against the target but not so bright as to cause reflection or flaring 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 and turning it anticlockwise whilst holding the sides of the switch 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	Recenter the reticle and remount 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 which was not used when zeroing	Recenter the reticle and remount 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	Recenter the reticle and refer to the <i>Scope will not zero: lack of elevation adjustment section below</i>
Scope tube bent due to being dropped or being misused	Return scope for tube replacement (not covered by warranty)

POSSIBLE PROBLEM	SOLUTION
Scope will not zero: Lack of elevation adjustment	
Receiver diameter out of spec.	Use Lynx MultiMax height adjustable rings or a brass shim stock under the back base to lower point of aim or under the front base to raise point of aim
Rifle barrel threaded into receiver ring at an angle	Same as above
Incorrect height mounts used	Recenter the reticle and use the correct mounts for the rifle.
Windage control turned in all the way limiting elevation adjustment	Recenter the reticle and refer to the <i>Scope will not zero: lack of windage adjustment</i> section 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	Retighten screw
Warped stock: stock coming into contact with barrel	Consult with gunsmith
Loose mounts	Remove scope and mounts and remount 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 remount 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	Zero the scope at high power
Scope faulty	Return scope for repair
Reticle and image not in sharp focus	
Eyepiece not focused for your eyes.	Refer to the section entitled <i>Focusing the scope</i>

POSSIBLE PROBLEM	SOLUTION
Parallax not set correctly	In scopes with parallax adjustment check the setting on the parallax ring / dial. 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, contact us via one of the following methods:

email [info@lynx.co.za](mailto:info@lynx.co.za)

send a message [www.lynx.co.za](http://www.lynx.co.za)

tel +27 (0)11 792 6644

fax +27 (0)11 792 8923

## WARRANTY

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### LYNX PROFESSIONAL

All Lynx LX Professional Series riflescopes have a lifetime warranty.

### LYNX ELECTRONICS COMPONENTS

Electronic components incorporated into Lynx products, such those incorporated into 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. Proof of purchase may be requested. 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

The model number is engraved on the underside of the windage / elevation saddle. All modern Lynx scopes have the letters **LX** and the generation number prefixing the magnification descriptor. All are considered “Lynx Professional Series” models. The numbers following the series identification indicate the scope magnification and the number after the last “x” is the objective lens diameter in millimetres. Suffix letters, which may or may not be present, serve to indicate any number of features the scope may have, such as side-focus, adjustable objective, tactical / target turrets etc.