



MTC

OPTICS

**COPPERHEAD SERIES
USER MANUAL**

FOREWORD

Congratulations on investing in an **MTC Copperhead** riflescope which will give you years of accurate, trouble-free shooting.

Manufactured to MTC Optics' exacting brief, Copperhead scopes incorporate cutting edge technology in their design brief and have been built using state-of-the-art manufacturing processes.



Model shown: Copperhead 3-12x44

Features include:

- **Glass-etched reticle**
Design exclusive to MTC Optics
- **Edge-to-edge multi-coated lenses**
Bright, clear picture quality
- **Side parallax adjustment**
Eliminates parallax error and assists in range-finding
- **10-yard minimum focus**
Suitable for airgun use and ultra-close-range shooting
- **Reticle illumination**
Assists with tricky background and lighting scenarios
- **30mm body tube**
More substantial build quality and light transmission
- **Flip-up lens cover**
Fast and practical protection for lenses when in the field
- **Fully water, fog and shock proof**
Increases longevity of the scope
- **Nitrogen purged**
Internal regulation of scope's high-end performance

This User Manual will help you get the very best from your new riflescope. Please read it thoroughly and familiarise yourself with your new scope before fitting it to your rifle.

Tip: When mounting your Copperhead riflescope, use only top-quality mounts. Fitting it to your rifle with cheap, low-quality mounts is false economy. Besides not maintaining zero and potentially creating misalignment with the bore, improper scope mounts may even mark or damage the scope.

BEFORE STARTING

Please familiarise yourself with the layout of your new MTC Copperhead scope, and the terminology used in this manual.



CARE AND MAINTENANCE

MTC's riflescopes are precision optical instruments, so they need to be treated with care. When cleaning the exterior, use a soft, damp cloth and dry off the surface afterwards. Keep the lens cover(s) closed when not shooting to protect your scope's lenses.

Important: Should you need to clean the lenses, do so with extreme care to avoid scratching or damaging their expensive coatings. Use a camera-quality 'puffer brush' to blow off excess dirt, which should then be gently brushed away. Should any dirt remain, put a drop of alcohol-based cleaning fluid on a lint-free cloth and lightly rub the area in a circular motion. **Do not** apply excessive pressure as this could damage the lens surface and invalidate the warranty.

Should you have any questions, please contact your local MTC Optics supplier, or MTC directly via e-mail: support@mtcoptics.com.

WARNING

NEVER LOOK DIRECTLY AT THE SUN OR ANY BRIGHT LIGHT THROUGH YOUR SCOPE - PERMANENT EYE INJURY OR EVEN BLINDNESS CAN RESULT

USING THE SCOPE

Mounting the scope to the rifle

Use mounts with 30mm diameter rings that are high enough to clear the magazine and ensure the objective (front) bell does not touch the barrel, but allow a comfortable head position when taking aim.

Set the eye relief by positioning the scope on the rifle (or adjusting the scope position within the mounts) so that you see a sharply-defined sight picture. Important: Do not press your aiming eye against the eye-bell, otherwise injury to your brow may occur during the rifle's firing cycle.

Adjust the primary focus (diopetre) to sharpen the crosshair. Look at an uncluttered background and then turn the fast-focus ring to get the sharpest definition of the reticle. *Tip: do not look through the scope for more than a few seconds at a time when setting up*



the focus, and never look at the sun. Note: Do not worry about the sharpness of the target at this stage. That will be focused by adjusting the parallax sidewheel (secondary focus).

Ensure the vertical crosshair is perpendicular to the ground by aligning it with a vertical edge – use a plumb line if necessary. Avoid canting (leaning) the rifle during this process – aligning the action with a spirit level will help in this respect.

Turret operation

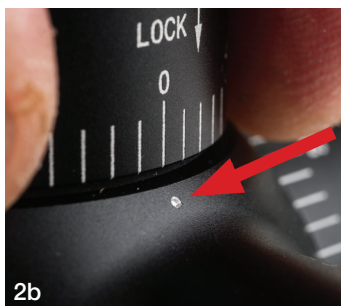
To unlock the elevation and windage turrets so as to adjust them, pull the vernier out. Press the turret back in to lock it (*figures 1/1a*). After zeroing - see opposite - the vernier can be set to a "0" reference. With the turret in its locked position, loosen the central cap screw a few turns so the vernier can be lifted off its seat and freely rotated to the "0" position (*figures 2/2a/2b*). Reseat the vernier and fully tighten the cap screw afterwards.



Figures 1/1a:
Unlocking and locking the external adjustment turrets



4-16 Turret adjustment



Figures 2/2a/2b:
Loosen the turret cap screw to freely rotate
the vernier to the "0" position

Zeroing-in

Initially, set a target at 15 yards (or bore sight the scope) and, aiming at a specific mark, shoot a few shots to observe the point of impact (POI). Do not compensate your aim during these initial shots, even if the shots do not strike where you intend them to. This initial group is to see how the sights need adjusting.

After you have fired a few shots and established a group on the target, adjust the elevation and windage adjusters in the direction that the POI needs to shift in order to strike where the central crosshair is. For example, if the group strikes the target low and right of your aiming point, adjust the elevation turret in the direction marked 'U' (Up) and the windage turret in the direction marked 'L' (Left).

When the group is roughly centre, move the target to your usual shooting distance (known as 'zero') and repeat the process to fine-tune the POI. *Tip: carry out zeroing in windless conditions.* When you are happy that your rifle is zeroed, set the turret vernier rings to their "0" mark (see figures 2 to 2b).

Running out of elevation turret adjustment

MTC ships its scopes from the factory with the elevation (top) and windage (side) turret adjusters in the mid-point position, but you should always check that they are set in the middle before zeroing your scope on a rifle for the first time.

If, with the scope's elevation adjustment turret set to its midpoint, the initial POI is a long way below or above the central crosshair, you will need to alter the angle of the scope in the mount. This is achieved with adjustable mounts or by using a shim in the cradle of the rear mount (figure 3).

If the POI is a long way below the horizontal crosshair, shim the cradle of the rear mount. *Tip: Use a strip of silver foil, folded to greater thickness if necessary, as a shim. You could also use a strip of old 35mm camera negative. However, do not use adhesive tape as this can cause the scope to move within the mounts when the temperature changes. Never shim the scope more than 0.3mm.*



Figure 3:
MTC's Blueprint adjustable mounts with a choice of 20mm picatinny or 3/8" dovetail

AMD2 Reticle

The second-generation Advanced Mil Dot (AMD2) reticle is suitable for all airguns and firearms as its multi-stadia design provides a multitude of aiming reference marks for holdover, hold under and wind allowance (figure 4). Its design is based around milliradian spacings. A milliradian is known as a 'MIL' and 1 MIL = 3.6" at 100 yards (7.2" @ 200yds; 1.8" @ 50yds etc).

On the Copperhead F2, the reticle is situated in the second focal plane (SFP) and the reticle remains the same size whatever the magnification is set to.

When the scope's magnification ring is set to the higher powers, the AMD2's multi-stadia design can also be used for range-finding (refer to section '**Parallax focusing**').

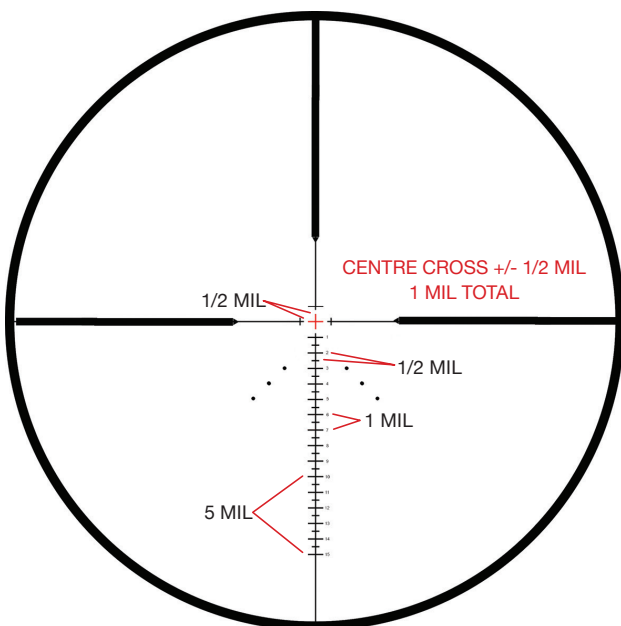


Figure 4:
MIL markings of the MTC Optics AMD2 Reticle

Crosshair illumination control

When shooting in tricky lighting conditions (e.g. targets in low light, or against high contrast or dark backgrounds), the crosshair can be illuminated in red.

To illuminate the crosshair, turn the rheostat ring located on the parallax sidewheel turret from '0' (off - black) to the required brightness level (*see figure 6*). Return to position '0' when the illuminated reticle is not required to preserve battery life.

The rheostat is powered by a CR2032 battery, accessed by unscrewing the rheostat cover on the side turret (*figure 5*).



Figure 5:
The illuminated reticle battery is housed in the parallax sidewheel turret

Parallax focusing (secondary focus)

The Copperhead series of scopes allows for parallax error to be corrected when shooting targets at varying distances. Parallax error is the apparent shift of the crosshair in relation to the target, caused by inconsistent eye-to-scope alignment. It is more prominent at closer ranges. Ideally, the scope's parallax should be set to the target's exact distance before shooting to eliminate the possibility of aiming errors.

To set the parallax, look at the target through the scope and, using the parallax side adjuster, move the sight picture's focus until the target looks at its sharpest. *Tip: the crosshair's primary focus should have first been set for your eye's dioptre - refer to section 'Mounting the scope to the rifle'.*

Always shoot with a sharp sight picture to ensure parallax error has been eliminated. *Tip: because the parallax side adjuster fine focuses the sight picture, the distance vernier on the side adjuster can also serve as a rudimentary range-finding guide (figure 6).*



Figure 6:
Turn the parallax side adjuster (inner ring) to ensure the target is at its sharpest. This will ensure any parallax error has been eliminated. The distance vernier can also be used as a rough range-finding guide. Note the outer ring, which is used to switch on and set the brightness level of the illuminated crosshair

TECHNICAL SPECIFICATIONS

Visit: www.mtcoptics.com

GUARANTEE REGISTRATION

MTC scopes are guaranteed for one year from date of purchase. The original purchaser can increase this to five years by registering their scope with MTC Optics *within 30 days of original purchase*. Registration can be made by either completing this form and returning it to the address overleaf, or by online registration at www.mtcoptics.com. Either method requires a copy of the original receipt. (This guarantee does not cover user-generated damage.)

Date of Purchase:

Dealer Stamp/Details:

Dealer Signature:

Customer Name:

Customer Address:

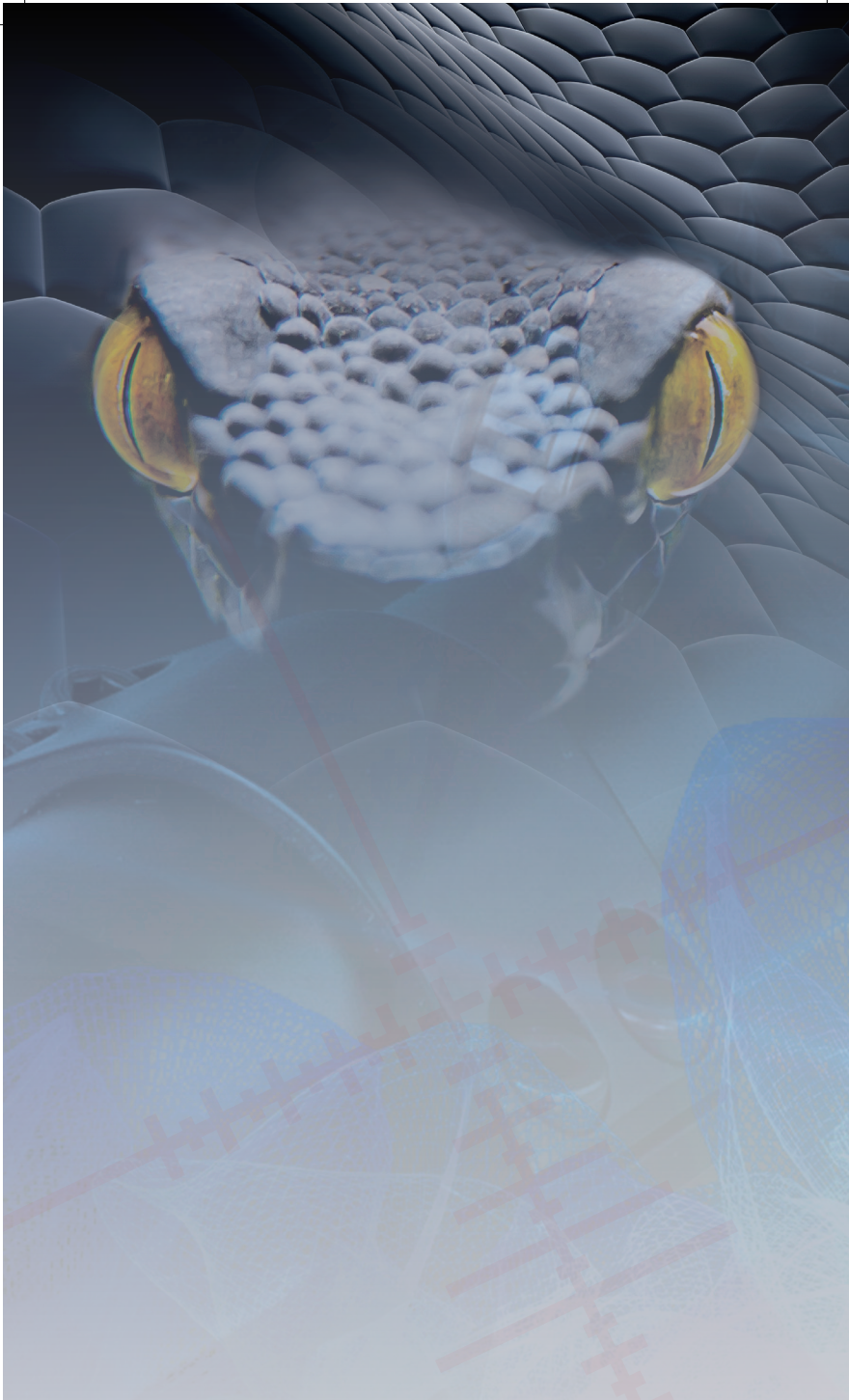
Customer Email:

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