The *CATSEYE* Collimation *BCXLV* Video Cheshire System User's Guide

With this system, collimation of the Newtonian telescope is truly a "one-man" operation with NO assistance required from a 2nd person day or night!

The new *CATSEYE* ™ Wired "VIDEO" Collimation System brings the precision of passive-tool collimation into the world of digital. The astronomer's "eye" has been replaced with a color CCTV camera integrated into the new *BLACKCAT XLV* ™ Cheshire. Now the signature axial alignment visual queues, so familiar to users of the *CATSEYE* ™ Collimation System, are displayed on a hand-held (or scope-mounted) LCD monitor eliminating the hassle of those tiresome multiple trips to and from the focuser to assess those "trial-and-error" adjustments. Now, dynamically watch the Cheshire visual queues, parallax-free, in "REAL-TIME" at the rear of your scope as you adjust the Primary mirror's tilt adjustment screws to "textbook" perfection.

System Components:

- ***BCXLV*™ Video Cheshire w/cap & 6"x4" velvet storage bag.**
- **4.3" TFT LCD Monitor/Camera Power Supply w/wrist Strap, Velcro base-mounting strip & User's manual.**
- **CCTV Pinhole Camera w/30 mm lens & Video/DCV Interface cable.**
- **2 extra camera lenses (35 & 45 mm) w/caps.**
- **CCTV Tester/Monitor w/video/DCV Interface cable.**
- **1 each male-male BNC & BNC-phono cable connection adapters.**
- **10' Video/DCV Extension Cable.**
- **120VAC/5V USB Charger adapter w/cable.**
- **Velcro cable wrap.**
- **8" x 7" x 2" zipper storage case.**

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MONITOR POWER SWITCH & CHARGING THE BATTERY:

The Monitor's 12v power supply has been pre-charged and tested prior to shipment and should be ready to use right out of the box. To charge the monitor's internal battery, refer to the left side of the monitor housing. Insure the monitor power switch is "OFF". Plug the USB AC/DC adapter into a 120 VAC wall socket and plug in the USB end of the charging cable into the adapter. Insert the cable's male charging jack on the other end into the "DC 5V IN" receptacle on the left side of the monitor. The "CHARGE" LED at the bottom left corner of the monitor will initially be "red" and will turn off when the battery is fully charged.

FINAL SYSTEM COMPONENT ASSEMBLY:

The camera, cable adapters, and extension cord have been pre-assembled. Plug in the "green" 4-pin connector on the end of the camera cable assembly into the receptacle on the right side of the monitor.

MOUNTING THE MONITOR TO YOUR SCOPE:

A 2" x 1-3/4" strip of self-adhesive male/female VELCRO has been applied to the base/handle of the monitor. The base/handle conveniently swivels to optimize the view angle at the back of your scope when collimating. Locate your favorite viewing position for the monitor at the rear of the scope having sufficient flat surface to apply the self-adhesive VELCRO. Peel off the clear protective film of the male VELCRO strip and press the monitor assembly into place. The monitor can now be removed and reinstalled on the scope using the VELCRO attachment.

FOCUSING THE CAMERA:

Before attempting to focus, LOOSEN ALL FOCUSER SET SCREWS to allow the *BCXLV* Cheshire to be freely rotated in the focuser drawtube.

Fully insert the camera lens barrel into the *BCXLV* Cheshire center pocket and secure the lens barrel by tightening the nylon thumb screw to lock it into position. DO NOT OVER TIGHTEN!

Turn on the monitor and adjust the lighting and/or the monitor display controls so that the Cheshire ring and center spot geometries are clearly illuminated on the monitor.

While holding the camera "body" stationary with one hand, rotate the Cheshire/camera lens assembly in the focuser with the other. This effectively screws the camera lens in or out to change the focal point.

Be aware that the Cheshire ring and Center spot images are located at different planes in space so they will not be in exact focus together so adjust get the "best" clarity compromise.

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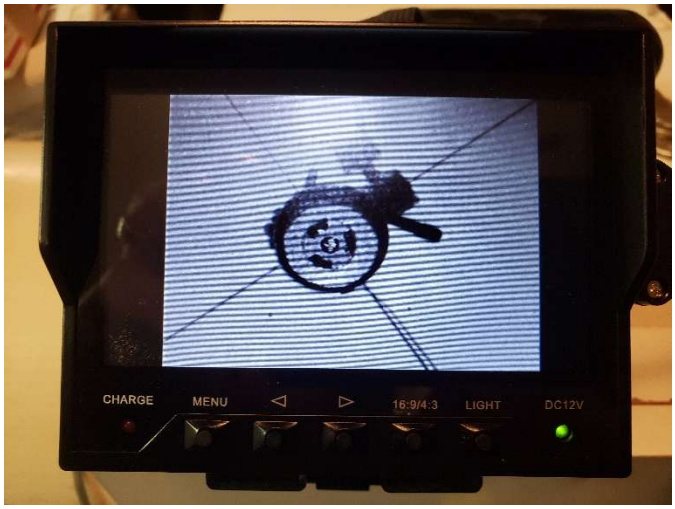

<u>OPTIMIZING THE MONITOR DISPLAY</u>: While observing the collimation queues, use the "MENU" button on the front left of the monitor to toggle through the "Brightness", "Contrast", and "Saturation" modes. Use the left/right arrow buttons to increase/decrease the values for best clarity viewing.

<u>ILLUMINATING THE CENTER SPOT</u>

The *CATSEYE* LED clip light (additional available accessory not included) provides convenient hands-free illumination of the reflective media of the spot and Cheshire ring in dim/dark collimation scenarios without compromise to your "night vision" as to the naked eye. Pointing the scope to a bright section of the sky AWAY FROM THE SUN in the daytime can also provide supplemental illumination if needed.

Place the clip next to the Secondary on a focuser spider vane opposite the focuser and aim the beam at the center spot. While watching the monitor, slightly adjust the direction of the light as needed to optimize the clarity of the collimation visual queue geometries & brightness while minimizing any distracting "glare" interference from the light itself.

CHANGING THE CAMERA LENS:

The camera comes mounted with a 30mm lens to minimize focus differences between the center spot and the Cheshire ring images while providing sufficient magnification for shorter focal length scopes. A 35mm and 45mm lens have been included in the kit if additional magnification of the visual queues is desired especially when collimating longer focal length scopes. Keep in mind that the relative focus between the center spot and the Cheshire ring diverges with increase in lens focal length so that a focus "compromise" between the two geometries will be required.

To change the lens, simply unscrew the 30mm lens and replace it with the 35mm or 45mm one. Adjust the in/out lens position using the "FOCUSING THE CAMERA" procedure above to achieve the best alignment discrimination view.